Settlement & ceramics in Southern Iran: An analysis of the Sasanian & Islamic periods in the Williamson collection

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SETTLEMENT & CERAMICS IN SOUTHERN IRAN: AN ANALYSIS OF THE SASANIAN & ISLAMIC PERIODS IN THE WILLIAMSON COLLECTION

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M.A. Thesis, 2005

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Between 1968 and 1971, Andrew George Williamson carried out one of the most extensive and ambitious archaeological surveys undertaken in the Near East. Williamson's survey of over 1,200 archaeological sites distributed widely through southern Iran represents the most detailed archaeological study of the region. Williamson's untimely death in Oman in 1975 prevented the work from being completed or published, and as a result, the information from his pioneering study have remained generally obscure.

A sizable portion of the finds that Williamson collected during the survey (17,000 sherds) were exported to the UK and deposited at the Ashmolean Museum in Oxford, along with much of the documentation associated with the project. A full synthesis of this material has not until now been attempted. Recognising the important scientific value of Williamson's survey, a detailed study of the Collection was initiated with the aim of: 1) providing a complete catalogue of the Collection; 2) creating a list and map of all sites that Williamson visited and 3) analysing the resulting dataset.

The discussion presented below, which describes the results of the research on the Collection, has been broken into two sections. The first section describes Williamson's work and the contents of the Collection (Chapter 1), and explains the methodology and approach that has been taken during this study (Chapter 2). The second section uses the data generated from the study to analyse regional settlement trends (Chapter 3) and the changing distribution of a selection of key ceramic wares (Chapter 4). Together these themes contribute towards a model for the long-term economic development along the northern shores of the Persian Gulf, in an area that has previously suffered from a major lack of primary archaeological research. Drawing on this study and the more detailed regional survey evidence available from Arabia and southern Mesopotamia, it should now be possible, for the first time, to set out a scheme that covers the Persian Gulf region as a whole.

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CRW.N-ID	Non-Identified Coarse Red Wares	200-01	n/a
DAB	Dark Brown Glazed Stoneware Jars	306	173
DEH.1-2	Dehua Moulded Ware, Groups 1-2	294	219-20
DUSUN	Dusun Stoneware Storage Jars	304	169
ENAM	Enamelled Porcelain	315	278
FE.N-ID	Non-Identified Far Eastern Glazed Wares	309	n/a
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FIGUR	Figurines	199	43
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FRIT.GW	Green and White Decorated Frit	281	158
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GWSG	Green & White Splashed Glaze	307-08	n/a
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HMP.N-ID	Non-Identified Hand-Made Painted Wares	223	n/a
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IRPW	Indian Red Polished Ware	210-11	86
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SLIP.TB	Thick Brown Slipped Ware	232	83
SMAG.A	Small Grey Vessels, Group A	174-75	8-10
SMAG.B	Small Grey Vessels, Group B	175-76	12
SMAG.C	Small Grey Vessels, Group C	177	13
SMAG.RC	Small Grey Vessel Related Class	177-78	14
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SPL.P	Polychrome Splashed Glaze	249	110
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SPW.BW	Brown on White Slip-Painted Ware	247	114
SPW.N-ID	Non-Identified and Degraded Slip-Painted Ware	248	n/a
SPW.YB	Yellow and Brown Slip-Painted Ware	245-46	112
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STO.EU	European Stoneware	273-74	141
STO.GRY	Grey Glazed Stoneware	300-01	179
STO.N-ID	Non-Identified Stoneware	303	n/a
STO.THAI	Thai Stoneware	302-03	177
SWIS	Soft White Speckled Grey Ware	193-94	31
TIN.B	Opaque Monochrome Blue Glaze	243-44	122
TIN.CT	Opaque White Glaze with Dark Cobalt Trailing	242-43	119
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UGP.F2	Fine Bodied Underglaze-Painted Ware, Group 2	266	137
UGP.G1	Glossy Underglaze-Painted Ware, Group 1	262-63	132
UGP.G2	Glossy Underglaze-Painted Ware, Group 2	263-64	133
UGP.GEN	General Unclassified Underglaze-Painted Ware	268	n/a
UGP.TTB	Two-Tone Black Underglaze-Painted Ware	267	139
VBW.1-2	Vietnamese Blue and White, Groups 1-2	315	279-80
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WINC	White Incised Ware	201-02	80
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WWJ.1-4	Jingdezhen White Ware, Groups 1-4	291-92	221-4
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YEMEN	Yemeni Yellow	268	127
YSPEC	Monochrome Yellow Speckled Glazed Ware	273	123

Table 1 *Class Code index (arranged alphabetically)*

Conventions

The following text is based on a detailed study of the ceramic finds contained within the Williamson Collection undertaken at various stages between 2001-05. A major part of this study has been the classification and catalogue of the Collection, which forms the basis of the analysis presented in Chapter 3 and 4. Within the text, frequent reference has been made to the ceramic classes listed in the catalogue (Appendix I), each of which has been assigned a Class Code made up of an acronym of the full class title. Some of the Class Codes contain a string composed of two parts separated by a full stop, with the first part designating the class group and the second part a particular sub-category. For example with FRIT.IW, FRIT or 'stonepaste' represents the broad ceramic family, and IW stands for 'incised white'; e.g. Incised White Frit. Within the text, either the full class title is given, or just the first part of the string when the discussion is of the group as a whole. A list of all of the Class Codes contained within the catalogue and referred to in the text has been placed at the front of the document for ease of reference (Table 1).

Acknowledgments
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INTRODUCTION

Between 1968 and 1971, Andrew George Williamson, a doctorate student from Pembroke College Oxford, carried out one of the most extensive and ambitious modern archaeological surveys undertaken in the Near East. Using simple equipment and working on his own or with one other helper/companion, he was able to record over one thousand two hundred archaeological sites distributed widely through southern Iran in the provinces of Fars and Kerman and along most of the northern shores of the Persian Gulf (Williamson, 1971a: 1). Williamson's survey represents the single most detailed and sustained attempt to investigate the archaeological evidence from across the region, and is one of the few pieces of large-scale research dealing with the Sasanian and Islamic periods specifically. Williamson's untimely death in Oman in 1975 prevented the work from being completed, and despite the massive scope and potential of the research, his work has remained generally obscure thirty-five years on since it was completed.

A sizable portion of the finds that Williamson collected during the survey - comprised of ceramics as well as smaller quantities of glass, stone and metal - were exported to the UK and deposited at the Ashmolean Museum in Oxford, along with much of the documentation associated with the project. Although various aspects of the Collection have already been investigated since the Collection was deposited in the Museum (Morgan & Leatherby, 1987; P. Morgan, 1991; Rougeulle, 1991a; 1991b; 1996), a full synthesis of the material has never previously been attempted. Recognising the important scientific value of Williamson's survey and the collection in the Ashmolean Museum, which represents one of the largest bodies of survey pottery from Iran outside of the country itself, a detailed study of the Collection was initiated at the University of Durham in October 2001 with funding from the British Institute of Persian Studies.

The principal aims of the investigation were: to develop an independent classification of the Collection with clear links, where they could be established, to the stratified and fully quantified sequences from Kush and al-Mataf in Ras al-Khaimah in the U.A.E (Kennet, 2004); to provide a complete catalogue of all of the sherds in the Collection; to establish a full list of the sites that Williamson collected from; to relocate as many of Williamson's site toponyms as possible; to use the available documentary archive to

gain an insight into Williamson's survey methodology and the subsequent division of the Collection; to provide a usable manual that would allow any future studies on specific aspects of the Collection to be set within the context of Williamson's survey as a whole; and finally, to conduct some preliminary analysis of the resulting dataset in order to demonstrate the potential of the Collection and to explore themes of regional economic change. With the latter aim, a deliberate decision was taken to consider a number of different types of analysis in order to demonstrate the full scope of the data, at the same time as avoiding the dangers associated with focussing too narrowly on any one particular issue.

Each of the aims listed above have now been satisfactorily accomplished and the results form the basis of the discussion presented here. Balanced against the success of the project, in particular the analysis of the data, have been a number of constraints. Most significant were the limitations imposed by time and the requirements of the degree for which the work was submitted. In addition there was the nature of the task, which required the major investment to be directed towards manual cataloguing and data processing activities, and the scope of the investigation, which bridges a large subject area, including the whole of the Sasanian and Islamic periods, the southern Iranian and Persian Gulf region, the theory of field survey, ceramic manufacture and distribution, trade more generally, and the use of artefact distributions to analyse economic change. As a result, some omissions have necessarily had to be made to the analysis and discussion. Obvious aspects that would clearly contribute to the study include a better integration of the archaeological evidence with the known historical framework for the period; consideration of some of the limitations of inferring settlement change or artefact distributions from field survey data (e.g. Cherry, 1982; Sbonias, 1999; Bintliff, 1999; Millett, 2000; Wilkinson, 1999; 2003 and many others); or a discussion of distribution mechanisms such as the 'distance decay' model (Renfrew, 1975) that might help to explain the circulation patterns of different types of pottery. Each of these considerations could be seen as desirable aspects of a more detailed study of the Collection, for the present the main aim is to set out the principle archaeological trends for the survey area and Collection as a whole. Indeed, it appears that what is unique about Williamson's survey and where its principle strength lies, is in the fact that it covers such an extensive geographic area and chronological range. Instead of focussing only Williamson's most significant discoveries, by providing an overview of the

Collection it should be possible for the first time to set out the long-term, broad-scale archaeological trends – what Williamson termed his "brute distribution" (Williamson, 1987: 22) – that can ultimately act as a gauge against which to test more detailed theoretical or historical appraisals.

The discussion presented below has been broken into two sections. The first section includes Chapter 1, which describes Williamson's work and the contents of the Collection, and Chapter 2, which describes the work that has been carried out on the Collection during this study. The aim of this largely descriptive first section is to set out the data and explain how the Collection was formed and how it has been dealt with in order to evaluate its potential significance as a source on which to base an analysis. Within the second section, an attempt has been made to use the data provided by the Collection to analyse a selection of themes. This section has been broken into two chapters: Chapter 3 deals with regional settlement trends as defined on the basis of the dating provided by the ceramic finds in the Collection. This type of analysis closely follows the model set out for the first time in Near Eastern archaeology by the work of Prof. Robert McCormack Adams, who succeeded in demonstrating the effectiveness of survey data in revealing long-term settlement trends in southern Iraq (Adams, 1965; 1981). Chapter 4 looks at the changing distribution of a selection of key ceramic wares, such as South or East Asian classes or particular local glazed wares.

CHAPTER 1. THE WILLIAMSON SURVEY

1.1 THE BACKGROUND TO WILLIAMSON'S RESEARCH

Williamson's Early Years

Andrew George Williamson was born in England on the 18th of December 1945, and was brought up in the county of Buckinghamshire in the immediate post-war years. His secondary education was spent at the prestigious private school of Rugby. During the summer before starting university, he attended a course in Spanish language and culture at Madrid University (Williamson, 1970a) and it may have been at this time that his interest in Islamic history was first cultivated. In 1964, he took up a place at Pembroke College, Oxford, reading for a degree in modern history, in which he specialised in the later Roman and Byzantine history (Allan, 1987: 7). The original research proposal for his dissertation was to look at the rock-cut monasteries and underground refuge complexes in Cappadocia (Letter 8), a topic that he pursued through at least one visit to Central Turkey, where he made notes on and took numerous photographs of the famous troglodyte caves.

During his undergraduate years Williamson managed to gain considerable archaeological experience, excavating at sites in southern England from a broad range of periods, including: Wharram Percy, the famous DMV site; Rainsborough Iron Age and Roman period hill fort; Saxon and Medieval levels at Oxford Castle and the Medieval town excavations in Southampton (Williamson, 1970a). Even at this early stage, Williamson earned himself a reputation as a pioneering figure within the British excavation scene (Kennet, pers. comm. 2001). During his undergraduate years Williamson was also able to travel to a number of Islamic countries including: Morocco, Algeria, and possibly Pakistan and Afghanistan, although these may have been visited in the years that followed. By the time that he had graduated, Williamson was fluent in Spanish, Portuguese, Latin and French; he could speak some German and had started to learn Persian and Arabic (Williamson, 1970a).

Williamson graduated from Pembroke College in 1967 with a second-class honours degree. The following academic year he was awarded a three-year state studentship by the Department of Education and Science to continue at Pembroke College with Ralph

Pinder-Wilson, Assistant Keeper of the Department of Oriental Antiquities at the British Museum, as his research supervisor. In the same year that his studentship began, Williamson made his first trip to Iran. There he quickly familiarised himself with the archaeological circuit and gained further excavation experience working at: Shahr-i-Qumis under John Hansman; Tepe Nush-i-Jan under the field director of the British Institute of Persian Studies, David Stronach and at Siraf, where he was made an excavation supervisor under David Whitehouse (Williamson, 1970a). At Siraf in particular, Williamson must have been provided with an opportunity to gain a first hand insight into the dating a definition of Early Islamic ceramics. At the end of April 1968, Williamson returned to Oxford where he spent an intensive period studying the relevant literature on Islamic sites in southern Iran and formulating a plan that he had obviously originally conceived whilst in Iran (Letter 30). The plan as he outlined it then was to carry out a survey of sites from historic periods in the provinces of Fars and Kerman that could be identified from existing maps, ancient and modern sources and through general field reconnaissance. One of the important reasons that Williamson identified for looking at this area was to examine the relationship and interaction between what appeared to be two major cultural units: Kerman with its links in Khurasan, and inland Iran and the southwest interaction sphere of Fars, Khuzistan and Mesopotamia (Letter 30).

First Prospective Survey (1968)

On August 25th 1968, Williamson travelled back out to Iran with a fellowship grant from the British Institute of Persian Studies, (1968-69, renewed in 1969-1970) in order to begin his fieldwork. On arriving in Iran he secured himself a Land Rover and spent the following five weeks making the final preparations for his first expedition, including repairs on the vehicle and applying for the necessary permits from the Iranian authorities (Williamson, 1968a; Williamson, 1968b). Having accomplished these last tasks, Williamson set out by himself from Tehran on the 1st October to embark on what became the largest and most enduring accomplishment of his archaeological career. Over the next three years he worked almost continuously on various aspects of the project that he had devised. Survey work tended to be carried out during the autumn, winter and spring months, though sometimes in the summer too. At other times, he was engaged with excavation work or was back in the UK working on articles or presumably carrying out research on the relevant literature. During the first part of the

survey in the autumn of 1968, Williamson travelled extensively on his own in the area between Yazd and Kerman and between Kerman and Shiraz (Williamson, 1968c). During this phase of the survey, the emphasis appears to have been on checking ancient places that could be identified from maps and historical sources, as well as making a general reconnaissance along the great trade routes that passed through the area: west towards Mesopotamia; east towards the Indus; south towards the Persian Gulf and north into the heart of the Iranian plateaux. The most significant 'discovery' made during this initial period was the major medieval city of Sirjan (Williamson, 1968b). The site, which acted as the regional capitol of Kerman between the 9th - 11th centuries, still spread over an area of 450 hectares, including the walled area and suburbs represented by mounding outside of the city walls. This is one of the sites that Williamson returned to many times during his investigations (Williamson, 1971b; 1972a: 26).

The Detailed Survey (1969-71)

During the winter months of 1968-69, Williamson spent a short time at Siraf during the 3rd season of excavations at the site. While there he was not regarded as a full member of the excavation team, and mostly concentrated on carrying out much needed repairs on his vehicle using the facilities willingly provided within the Siraf dig house (Whitehouse, pers. comm. 2003). From Siraf the survey was resumed, this time along the Persian Gulf coast, travelling between Bushehr and the Minab plain over the space of four months (Williamson, 1968a). Numerous sites were visited along the coast. One of the significant discoveries of this season's work included Williamson's recognition of the full significance of the massive Sasanian ruins at Bushehr. The area had already been recognised for its archaeological importance throughout the 19th century by British political residents at Bushehr and other travellers, who noted the presence of jar-burials across the peninsula and bricks with cuneiform inscriptions at the prominent mound of Liyan (Simpson, Forthcoming). Excavations had been resumed at the latter site by a delegation sent from the French Mission to Susa (Pézard, 1914), and a further brief reconnaissance was made of the area when Stein visited in 1933 (Stein, 1937: 234-41). Williamson, however, was the first to note the importance of Bushehr within a Sasanian context and to trace out the full extent of the Sasanian ruins, which represented the largest site of any period that he identified on the Persian Gulf coast, with 450 hectares of mounded occupation. He was also the first to link the most substantial site at Rishahr to the ancient city of Rev Ardashir: a major trading port known from historical sources

with early direct trade links to East Africa, India and East Asia (Whitehouse & Williamson, 1973: 37, 42).

Williamson and Prickett

From the point when Williamson first embarked on his coastal survey in 1969, up until just before he finished the work in 1971, (a period of two and a third years), he was accompanied and assisted in his work by Martha Ellen Prickett. Prickett brought with her a rather different outlook and approach to the subject, as well as additional funding to the project from the National Science Foundation Graduate Fellowship in America (Prickett, 1986a: 13). Prickett had began working in Iran as part of the Harvard team at Tepe Yahya under the directorship of Carl Lamberg-Karlovsky, though she also participated in the British Institute of Persian Studies excavations at Siraf. It is not clear when Williamson and Prickett's alliance was first formed; possibly it was during the 1968-69 season at Siraf. Prickett's main area of interest was in the development of agriculture and urbanisation in prehistoric periods, and in particular the earliest phases of agriculture and domestication in southeast Iran, although in all her work she tended to maintain a multi period focus. Her earlier training had been in geology, which she studied at university. Another strong influence on her work was the emerging processual school of archaeology in America, which was beginning to make a major impact within the discipline at that time. With this training she brought a new emphasis to the project: a concern with the environmental setting of human activity within the landscape, including climate, flora, geology and irrigation (Prickett, 1986a: 20). While it is less clear how Adams' surveys in southern Iraq and southwest Iran had affected Williamson (Adams, 1965; 1981), Prickett is explicit in attributing credit to his approach, which she saw as setting out the first effective processual methodology for Near Eastern archaeology. Although Adams was not the first to recognise the primary importance of irrigation in arid environments, he was perhaps the first within archaeology to apply the principles of geography and make irrigation an explicit subject for investigation in its own right. (Prickett, 1986a: 20).

Working together, Williamson and Prickett appear to have complemented each other, yet at the same time remaining focused on their own particular periods of interest. Prickett would work on any prehistoric sites and material that they came across (Williamson, 1971a: 4; 1971c: 2), while Williamson would concentrate specifically on

the Sasanian and Islamic periods, which was an area that he could justify working on archaeologically, while maintaining the techniques learned through his more traditional historical training. This separation was followed all the way through the basic recording of sites, study of survey material and the eventual deposition of the two parts of the collection. The separation between the prehistoric material and later finds is actually a crucial area to address, as it has a direct bearing on our understanding of the survey collection's composition. All of the prehistoric finds that Williamson collected during his first season between September 1968 and May 1969 were apparently meant to be handed over to William Sumner for study (Williamson, 1970b: 206). Later when Prickett and Williamson started working together, this arrangement was revised, with Prickett taking over responsibility. Despite her interest in prehistoric sites, very few were noted, and it was rare for more than one site for any given period to be identified within each of the areas surveyed, the exception to this being the Shah-Maran Dualatablad basin, where a dense concentration of $4^{th}/5^{th}$ millennium settlement was noted close to Tepe Yahya (Prickett, c.1971). As a result, at the end of August 1970, Williamson submitted a request to the Director General of the Iranian Archaeological Services, Mr A. Pourmand, to separate out 40 bags of prehistoric material that he had collected, to be given over to the Yahya Project and shipped out for study in America (Letter 32). It is not clear whether this in fact happened; however, it seems highly likely that permission would have been granted. A similar division of the rest of the collection also appears to have been followed, although the attempt to separate prehistoric and later materials does not always appear to have been successful.

At the same time as maintaining a chronological division of focus, there would inevitably have been some areas of overlap between Williamson and Prickett's work and both would have assisted each other in the day to day tasks of site location, recording and finds selection. The fact that they worked as a team in this way would clearly have increased the efficiency of the survey. Despite this, one may be able to detect a slight hint of competition between them, even if this manifested itself in the form of jest. For example in a letter to William Sumner, Williamson laments the fact that "despite my efforts Martha succeeded in finding several prehistoric sites", during a piece of survey work they did together on a wet day in the Marv-Dasht area (Letter 31). In general though, it appears that their different areas of research complemented each other well, though for the most part it appears that it was Williamson's research that

was given greater precedence (Prickett, c.1971). At the same time, the extent of their collaboration was such that it may be more accurate to regard the project as the Williamson/Prickett Survey, though this will not be adopted here, as the "Williamson Survey" already has some recognition as a title, and in any case it was Williamson who initiated and took responsibility for the research.

Unfortunately no complete account of Williamson's survey appears to have survived. An attempt has therefore been made to collate all of the primary documentation in the Collection Archive, in order to provide an outline of Williamson's short but active career as well as an indication of where he surveyed and how long he took over different parts of the work (Table 2).

YEAR	DATE	EVENT	SOURCE
1945	18th Dec	**Born**	
1959 - 1963		**Attended** Rugby School in Warwickshire for secondary education	Williamson, 1970a
1964		**Awarded certificate** in Spanish language and civilisation from Madrid University	*Ibid*
		Began degree at Pembroke College, Oxford University, studying Modern History	*Ibid*
1965		**Excavated** at Wharram Percy	*Ibid*
		Excavated at Rainsborough hill fort	*Ibid*
		Excavated at Oxford Castle	*Ibid*
1966		**Excavated** at Cirencester Minster	*Ibid*
		Excavated at Southampton, medieval town area	*Ibid*
1967		**Completed degree** at Pembroke College specialising in later Roman and Byzantine history. Awarded 2nd Class Honours	*Ibid*
		Made Research Student at Pembroke College with Ralph Pinder-Wilson as his research supervisor with state funding from the Department of Education and Science	Williamson, 1970a; Letter 33
		Excavated at Tepe Nush-i-Jan under David Stronach	Williamson, 1970a
		Excavated at Shahr-i Qumis under John Hansman	*Ibid*
	Oct	**Made Excavation Supervisor** during the 2nd season at Siraf under David Whitehouse	*Ibid*
1968	Jan		
	Apr 21st	**Returned** to England	See below
	May	**Studied** in Oxford, reading relevant literature on Islamic sites, looking into Sumner's late painted ware and making plans for survey in Fars and Kerman	Letter 30
	Aug 25th	**Returned** to Iran	Williamson, 1968b
	Aug	**Applied** for permit from the Ministry of Culture and Arts to survey in Fars, Kerman and the Ports and Island provinces of southern Iran	Williamson, 1968a
	Sept	**Made final preparations** for surface survey work including repairs on Land Rover	Williamson, 1968b
	Oct 1st	**Started first survey** in Iran. Set out from Tehran visiting sites on the way towards the south	Williamson, 1968c: 3

	Oct 6th	**Reached Kerman**	Williamson, 1968c: 37
	Oct 7th – Nov 28th	**Surveyed** continuously for nearly two months covering sites in the area between Yazd to Kerman and Kerman to Shiraz. Covered 5,435km, an average of 91 kilometres a day, (distances vary from 258km to 13km a day). Made first visit to Sirjan	Williamson, 1968c: 1-169; Williamson, 1968b
	?	**Visited** 210 Sasanian and Islamic sites from Sumner's Marv-Dasht survey, took measurements and collected artefacts	Williamson, 1970b: 206
	Dec	**Present** at Siraf during the third season under David Whitehouse, spent most of his time making repairs to the Land Rover	Whitehouse, pers. comm. 2003
1969	Jan		
	Feb – May	**Surveyed** the Persian Gulf coast from Bushehr to the Minab plain as well as some of the off shore islands, accompanied from this point by Martha Prickett. Finished initial 'non-intensive' survey	Williamson, 1970b: 206
	Oct 30th	**Set out the periodisation** for the Marv-Dasht sites	Williamson, 1969
	Nov	**Surveyed** the Jiroft plain and Rudbar area, (brief survey)	Prickett, 1986a: 511
	Nov 20th	**Surveyed** the Marv-Dasht plain checking nine sites (7M1-9) identified by Sumner, collecting sherds and taking measurements with Martha Prickett	Letter 31
	Nov 21st	**Stayed in Shiraz**	*Ibid*
	Nov 26th – Dec c.9th	**Surveyed** the Bushehr peninsula, visiting Sabzabad, Zangina, Gharibu, Tangac, Rishahr and apparently assigning most numbers from H1 – H201	Williamson, 1969-70: 210-25
	Dec 11th	**Surveyed** Shilau close to Siraf, various sites noted and identified	Williamson, 1969-70: 226
	Dec	**Surveyed** the Minab plain for two weeks (Prickett says that this happened in the winter of 1970-71 but dates appear to be wrong, probably a year earlier)	Prickett, 1986a: 513
1970	Jan		
	Jan	**Surveyed** the Gulashgird area, brief coverage of the region	Prickett, 1986a: 511
	Jan 22nd	**Surveyed** the Gavbandi area	Williamson, 1969-70: 231
	Feb – Mar	**Visited** America?	Williamson, 1971d: 32
	Apr – May	**Acted as Excavation Director** at Sirjan with funding from the BIPS Siraf Fund, Oxford University's Meyerstein Research Fund and the British Academy's Stein-Arnold Fund, with assistance from Anthony Hutt, Peter Farries, Charles Matthew and Martha Prickett	Williamson, 1971b; Williamson, 1972a: 26-27; Allan, 1987: 7
	June	**Awarded** a grant the Gerald Avery Wainwright Fund for Near Eastern Archaeology from Oxford University in order to complete the survey project in southern Iran	Williamson, 1971a: 1
	June – July	**Surveyed** the Sirjan area with funding from BIPS and Oxford University	Williamson, 1971b
	July – Aug	**Acted as Excavation Director** at Tepe Dasht-i-Deh, first season, on behalf of the Harvard Expedition to Tepe Yahya	Williamson, 1971e: 182-83
	Aug – Sept	**Surveyed** the Persian Gulf coast?	?

	Oct 1st	**Funding awarded** by the Gerald Averay Wainwright Fund for Near Eastern Archaeology, Oxford University to complete the surface survey	Letter 33
	Nov	**Wrote** a short joint article with Martha Prickett entitled: 'Survey of the Persian Gulf coast' for *Iran* IX, never published	Prickett & Williamson, 1970
	Nov – Dec	**Visited Abu Dhabi** for one and a half months to investigate the potential for archaeological research on the pearling industry, involving survey of the southern shore of the Persian Gulf and re-analysis of Iranian materials from the 1968-71 survey	Williamson, 1971a
	Dec	**Surveyed** the Minab plain. Eight weeks intensive survey covering the whole area (Prickett says that this happened in the winter of 1971-72 but this is not possible as neither of them were in the country! Probably happened a year earlier)	Prickett, 1986a: 513
1971	Jan		
	Feb	**Made arrangements in England** for research on the pearling industry (not clear if this happened)	
	Mar	**Returned to Iran** to analyse all of the survey material collected between 1968-71. Official objections raised to working at Siraf, possibly due to the absence of a field director on the site at the time	Whitehouse, pers. comm. 2003
		Negotiated the movement of three tons of pottery from the Siraf dig house up to Shiraz for analysis	Letter 24
	Mar 30th	**Application submitted** to the Ministry of Culture and Arts for a permit to survey in Fars, Kerman and the Ports and Islands provinces	Letter 34
	Apr	**Pottery analysis** completed. It may have been at this point that Williamson was able to formalise his type series and to sub-divide the section of the assemblage that he intended to export back to the United Kingdom	Williamson, 1971a
	May 17th	**Third Permit** issued	Williamson, 1971f
	June 5th – 14th	**Surveyed** the Bushehr peninsula. Approximate site sizes recoded at Rishahr and Hallileh. New areas surveyed including the Barfarroukh wadi and an area several kilometres south of the Dastak Fort	Williamson, 1971f; 1971g
	June 14th	**Ran into official troubles** with Captain Moustavian, the head of the navy in Bushehr, leading to unfounded fears from BIPS that Williamson had been imprisoned, and a considerable amount of confusion and mis-communication between Stronach and Williamson as a result	Williamson, 1971g; 1971f: 4-5; Letters 25, 18 & 35
	June – Aug	**Directed Excavation** at Tepe Dasht-i-Deh on behalf of the Harvard Expedition to Tepe Yahya	Williamson, 1972b: 177-78
	July	**Summoned** to Tehran to answer questions over alleged mis-conduct at Bushehr peninsula, quickly dealt with and returned to excavation	Letter 36
	Aug 14th	**Application** made to museum in Tehran for permit to conduct further survey work	Letter 36
	Sept	**Surveyed** in the Furg and Upper Rud-i Gushk areas, brief coverage of the region	Prickett, 1986a: 511
	Sept 4th	**Stayed in Shiraz** at the Asia Institute	Letter 36
	Sept c.15th	**Surveyed** sites in the Minab plain	*Ibid*

	Sept 24th	**Stayed in Abadan to** see Martha Prickett off on a flight to America. This marked the end of their joint work on the survey in Iran	*Ibid*
	Oct 1st	**Surveyed** the Minab plain	*Ibid*
	Oct 2nd – 6th	**Surveyed** the Jiroft area	*Ibid*
	Oct 7th – 13th	**Drove** from Jiroft to Sirjan then spent time taking final measurements from the site	*Ibid*
	Oct 14th – 28th	**Drove** between various locations in the 'V' area around Shiraz; the area where the survey was first begun three years earlier	Williamson, 1971d: 35-36, 64
	Oct	**Funding** from the Gerald Avery Wainwright Fund for Near Eastern Archaeology expired	Williamson, 1971a: 1
	Oct 29th – Nov 8th	**Stayed in Shiraz**	Williamson, 1971d: 36
	Nov 9th	**Returned** to England	Williamson, 1971d: 36
	Nov	**Organised shipment** of pottery back to England	Letter 26
	Nov 27th	**Wrote** to David Philips regarding a job offer made via Betrice de Cardi to work as a curator at the Dubai Musuem	Letter 37
	Nov –Dec c.10th	**Wrote** the first two chapters of his doctorate thesis entitled: 'The Maritime Cities of the Persian Gulf and their Commercial Role from the 5th Century to 1507'	Letter 37
	Dec c.10th – c.27th	**Visited America**, purpose unknown	Letters 47 & 40
1972	Feb 13th	**Proposal** sent to David Philips to take up the museum job in Dubai on a part-time rather than full-time basis	Letter 40
	Sept 13th	**Paper** delivered to the 6th International Congress of Iranian Art and Archaeology, Oxford, entitled: 'Regional diversity in medieval Persian pottery in the light of recent investigations'	Williamson, 1972c
	Sept 27th – 28th	**Paper** delivered to the Society for Arabian Studies at the Institute of Archaeology, London, entitled: 'The kingdom of Hormuz and trade in the 14th - 15th C. AD'	
	Oct 1st	**Paper** requested by J.E. Dayton that later appeared in PSAS 6, entitled: 'Hormuz and the trade of the Gulf in the 14th and 15th centuries AD'	
1973	Jan 20th	**Visited** the Bid Bid copper mines in Oman before moving on to another mine at Luzuq	Williamson, 1972-73: 48, 59
	Feb 7th – 19th	**Stayed in Oman** visiting various archaeological sites including Qalhat	Williamson, 1972-73: 26
	Feb 17th	**Interviewed** for the post of Director of Antiquities in Oman	Williamson, 1972-73: 26
	May	**Stayed in Oxford** planting a garden!	Letter 11
	June 28th – 29th	**Paper** delivered to the Society for Arabian Studies at the Institute of Archaeology, London, entitled: 'Harvard archaeological survey in Oman, 1973 – Sohar, the trading port of Oman'	
	Sept	**Assisted** Martha Prickett with her Upper Rud-i Gushk drainage survey project for eight days, planning standing structures	Prickett, 1986a: 480, 500
	Oct 1st	**Directorship in Oman** began	Letter 44

1974	March	**Stayed in Oman**, still doing some work on his material from Iran	Letter 46
		Restoration work scheduled for nine months on the building selected for the Oman National Museum with a two year timetable set for its eventual opening	Williamson, 1974-75: 14
1975	Spring	**Died** during an accident in the Dhofar region of southern Oman	Allan, 1987; Morgan, pers. comm. 2001
	Sept	**Inventory** made of Andrew Williamson's pottery in Iran by Martha Prickett	Prickett, 1975

Table 2 *Summary of known activities during the course of Williamson's life, and in particular his archaeological survey of southern Iran from 1968 - 1971.*

In the future, it may be possible to refine the scheme that has been provided above, but for the moment all available sources have been utilised in order to provide as accurate an outline as possible. Based on this information, one can estimate that the survey itself occupied somewhere between 16 and 18 months of fieldwork. This was supplemented with excavation, in particular the work that Williamson directed at Sirjan and Tepe Dasht-i Deh, as well as pottery analysis and many months of research on the relevant literature; although some of these activities are even less well documented than the survey itself. Other related activities included the inspection of pottery from excavations and collections, and prospective work in new fields such as his pearling research on the southern shores of the Persian Gulf. The research as a whole fitted into Williamson's wider vision and was at the same time directed specifically towards the production of his doctorate thesis. Initially the timetable that was set for completing this was the end of December 1971. This date had to be pushed back, firstly due the delay in the analysis of the pottery collection at the beginning of that year, but also because of the renewed invitation that he received to excavate at Tepe Dasht-i-Deh Williamson, 1971a: 2, 4). As a result of these events, as well as perhaps the unspoken factor of his general attachment to the survey work in Iran, which he continued with until just before he left the country, the submission date for his thesis was reset for the end of Trinity term in 1972.

After the Survey

Shortly before returning from Iran on the 9th November 1971, Williamson arranged to have a significant body of the finds from his survey exported to the UK (Letter 26). It is not clear if the material from his Sirjan excavation was included in the same shipment, certainly the Tepe Dasht-i Deh material from the 1971 season of excavation was

dispatched separately and had not cleared customs even by 1973, although it had arrived in the UK nearly a year before (Letter 44). On returning to the UK, it appears that Williamson may have begun work immediately on his thesis in order to meet a spring deadline that he was aiming for (Letter 37); though if he did work on it at the end of 1971, then it cannot have been for long, as he departed for America sometime in early December and did not return until the end of the year (Letter 47). The purpose of this visit is not clear although it is known that he spent time in Cambridge Massachusetts and visited the Peabody Museum (Letter 16). During the spring, Williamson was able to continue working on his thesis (Letter 39).

Williamson's thesis was originally entitled: *Archaeological and documentary material for the history and mechanisms of commerce in Southern Iran from the seventh century A.D. to the end of the Portuguese Period.* Later the title was changed to: *The Maritime Cities of the Persian Gulf and their Commercial Role from the 5th Century to 1507,* presumably to take account of the significant discoveries that he made at Bushehr. As a whole, the thesis was to have a strong historical focus, setting out the available evidence for the successive trade centres within the Persian Gulf, the balance of political power that revolved around them, and the expansion of trade within the Persian Gulf from the Sasanian Period through to the Portuguese occupation of Hormuz. In turn, he aimed to build upon this framework of pre-existing knowledge and to test its various assumptions using the extensive archaeological data that he had collected during his survey and excavations in southern Iran (Williamson, 1971-72a).

The first chapter that was completed, Chapter 5, was entitled: *Rishahr and the development of trade from the 3rd to the 7th centuries A.D.* In this chapter Williamson dealt with three major aspects related to trade: the development and increase in long distance trade; the role played by urban centres in stimulating and controlling commerce and the mechanism responsible for the flow of materials within different geographic areas. In particular, emphasis was given to the major contrasts that exist between inland and coastal areas in relation to the types of contact systems that prevailed during successive periods (Williamson, 1971-72b: 4; Whitehouse & Williamson, 1973: 33). Other aspects addressed included the development of *qanat* irrigation and subsequent settlement growth in inland areas of Fars and Kerman, the nascent growth of the Siraf region and the importance of pearling sites along the Persian Gulf Coast. This general

discussion led on to one of the most detailed areas of his survey work put together from three separate visits to the Bushehr peninsula; the results of which were also presented in outline in publication (Williamson, 1972d; Whitehouse & Williamson, 1973).

The second chapter that was completed was entitled: *The origins of direct maritime trade with the Far East*. This is essentially an exploration of Arab and Chinese historical sources to consider whether significant trading between the Persian Gulf and East Asia began during the Sasanian period, as opposed to the beginning of Islamic period as others had argued (Williamson, 1971-72c; *cf.* Hourani, 1947). The basic conclusion that emerges from this discussion is that significant activity probably did not begin until the 8th - 9th centuries, although some commodities may have passed overland or through a chain of sea-born contacts during earlier periods. In addition to the chapters that were completed, it is clear that changes in trading patterns during the Islamic period and the significance of the Siraf region were going to feature strongly in the later discussion (Williamson, 1971-72a).

Williamson hoped to be able to complete his thesis within the next few months and then to take up the Randall MacIver Junior Research Fellowship that he had already successfully secured from Queens College, Oxford, the previous year in order to research the history of pearling on the southern shores of the Persian Gulf (Letter 37; Allan, 1987: 7). His interest in this project had been stimulated initially by the discovery of a string of small Partho-Sasanian settlements associated with large shell middens and rich ceramic assemblages, including Indian, Baluchi and Mesopotamian imports, along the barren coastal stretch west of Bandar-i Lengeh (Williamson, 1971-72b: 28-30). These sites appeared to provide secure evidence for large scale pearling activity on the northern shores of the Persian Gulf; an activity that Williamson believed was particularly important in stimulating long distance trade within the wider western Indian Ocean during this period. Williamson had already been involved with this research for some time and it was with a view to this project that he made a trip to Abu Dhabi in 1970 (Williamson, 1971a).

Although Williamson did manage to write up a portion of his thesis during the spring of 1972, it appears that there were other commitments and opportunities that kept him occupied. In fact, as soon as he returned to the UK after finishing the survey in Iran he

was presented with an offer of employment working as a curator, helping to set up a museum of ethnography and archaeology in Dubai (Letter 15; Letter 19; Letter 37; Letter 20). Despite the fact that this position would have provided him with an opportunity to carry out archaeological research in an area that was of relevance to his proposed pearling study, the rather junior post being offered was apparently not overly attractive and the unfavourable conditions that Williamson submitted (Letter 40) were later rejected (Letter 21; Letter 7).

What occupied Williamson through the summer months of 1972 is not clear, but certainly some of this time was spent working on materials from his excavations at Tepe Dasht-i Deh (Letter 39). He may also have written up the short report that he prepared for *Iran* on the 1971 season of excavation during this period, as well as the report for the Iranian periodical *Bastan Chenasi va Honar-e Iran* and the joint paper that he wrote with Whitehouse (Whitehouse & Williamson 1973). Later that year he also made plans for a further season of excavation at Tepe Dasht-i Deh in 1973 (Letter 16).

It is very likely to have been in the late summer or early autumn of 1972 that Williamson first heard about the forthcoming appointmentship for the Director of Antiquities and Curator for the planned National Museum in Oman. Stronach, who had initially been contacted about these appointments, apparently put Williamson forward as the most suitable candidate (Letter 12). Williamson also had a close contact inside Oman, an officer in the army and a member of the Oman Historical Association[1], who also sat as a junior member on the board of the Ministry of Information (the government department responsible for the museum appointment), who kept Williamson informed of developments and lobbied on his behalf. It appears that the position of museum curator was not without contention. In fact, the post had already been unofficially granted to a retiring Omani army officer, who had been given the post as a reward for his loyal service, but who otherwise had few qualifications for the position (Letter 12).

At the same time as the negotiations over the curatorial post were taking place, a number of foreign teams were in the process of making applications to work in Oman for the first time following the dramatic coup that took place in the country in 1970, in

[1] The Oman Historical Association was formed the previous year in 1971 to protect Oman's heritage from modern development.

which the former ruler Sultan Sa'id bin Taymur was overthrown by his son Qaboos ibn Sa'id, with assistance from the British. These events opened up access to Oman for foreigners after a long spell of international isolation. Williamson's contact inside Oman was worried that foreign teams were being allowed in unchecked, and was therefore particularly keen that Williamson be appointed the role of Director of Antiquities, which would give him responsibility for vetting applications and issuing permits to foreign archaeologists. Karen Frifelt had actually already been given this responsibility, but only on a temporary basis and by a de facto arrangement based on the fact that she was the director of the first foreign team admitted into the country since the coup with official government backing (Letter 13).

One of the teams that was seeking to be admitted at this time was the Harvard Archaeological Survey, directed by Jim and Judith Humphries (Williamson, 1973: 32), which Williamson had already been invited to join (Letter 41). Their work was scheduled to begin in the winter of 1972/73 (Letter 9), with Jim working on prehistoric sites (Letter 42), while Andrew and Judith focussed on later periods. Permission for the project was granted in late November 1972 (Letter 10), and the team travelled to Oman in early 1973 (Letter 14). During the project, Williamson carried out a detailed survey of Sohar and its hinterlands, and produced maps showing the size of the city during different periods based on the surface distribution of ceramics, which he later went on to publish (Williamson, 1973; 1974).

At the same time as preparing for the Harvard Archaeological Survey and for the appointments in Oman, Williamson presented papers at the Sixth Congress of Iranian Art and Archaeology and at the Seminar for Arabian Studies, which he produced papers for in the same year (Williamson, 1972c; 1972e; 1987). During this busy period he was also maintaining correspondence with Beatrice de Cardi over proposals to work on surveys that she was planning in Oman and Qatar (Letter 2). Williamson appears to have been prepared to work on the Qatar project (Letter 43; Letter 3) and was put down as a key member of the proposed team (Letter 4), however his commitment to the Oman project never appears to have been certain.

In February 1973, after returning from the Harvard Archaeological Survey, Williamson travelled back out to Oman to attend an interview for the post of Director of Antiquities

(Williamson, 1972-73: 26), for which he was later accepted (Letter 44; Letter 5[2]). At the age of 28, Williamson had to make the decision between completing his thesis and presenting the findings of his extensive research in Iran, or taking up the attractive opportunity of a professional position with a set of challenging but enticing responsibilities; he decided on the latter. The post was not however due to commence until October 1st 1973 (Letter 44). Little information has been available on the work that Williamson carried out that year or the next but shortly after receiving confirmation of the job, he learned that funding had been cut for the 1973 season of excavation at Tepe Dasht-Deh (Letter 17) and no other plans appear to have been made in its place. Williamson apparently did not intend to work on de Cardi's survey in the Ibri and Jabal Akhdar regions of Oman, although he was able to assist her using the influential status that he had acquired in the country (Letter 6; Letter 45). In the autumn of 1973, just before taking up the post in Oman, Williamson did go back out to Iran to assist Prickett planning a number of buildings on her Upper Rud-i Gushk Survey, but this was only for eight days (Prickett, 1986a: 480, 500).

Once Williamson took up the post of Director of Antiquities, he must have been kept extremely busy with his various duties. These apparently included setting up a National Museum, procuring artefacts for the national collection, organising cultural events including field tours, and conducting archaeological research (Williamson, 1974-75). Needless to say, very little time was left for working on the results of the Iranian survey or on the completion of his thesis, though there are signs that this area had not been dropped altogether from his thoughts (Letter 46[3]). Clearly he must have intended to return to the work at a later stage, but in the mean time the work was temporarily shelved.

The events that followed less than two years after taking up his post could never have been foreseen. In the spring of 1975, Williamson was evidently unable to restrain his temptation to carry out a prospective tour of the Dhofar region; an area that offered great archaeological promise due to its fertility compared to other parts of the country. It

[2] Williamson was not appointed Director of Antiquities in Oman in 1972 as indicated in the account of Williamson's career provided by Allan (1987: 7). In fact his directorship did not begin until the 1st of October 1973; he therefore only spent about one and a half years working in Oman before his tragic accident.

[3] In the letter Williamson refers to continuing work that he was doing on the Marv-Dasht Survey material.

was also an area where no archaeological research had been carried out for many years due to the protracted struggle between the Omani administration and local tribal insurgents, who were fighting a guerrilla war from the inaccessible mountain terrain with backing from Marxist elements based in the Social Republic of Yemen. Before the conflict began, earlier archaeological work in the area included the excavation by the American Foundation for the Study of Man at Khar Rori (ancient Sumhuran), which was identified as one of the ports of the *Periplus* and part of the South Arabian cultural and political world. Williamson's research in this area may have marked a departure away from his previous research, yet it was an obvious progression for someone based in Oman who was interested in maritime contacts in the western Indian Ocean (Simpson, pers. comm. 2004).

In the same year that the new government of Oman finally managed to bring the Dhofar region under control, Williamson entered the area to begin fresh archaeological investigations. Perhaps like Stein, who had gone into the remote Buner area in Swat in 1898 in search of the ancient land of Udyana, just hours after the area was brought under control through a military campaign (Mirsky, 1977: 71-72), Williamson saw an opportunity for adventure and acclaim that he was prepared to take risks for. Because of the threat to his safety, Williamson was travelling in the company of a military convoy. Their route lay through an area that had been primed with anti-personnel mines. Despite the fact that his vehicle was not leading the column, it happened to detonate a landmine, killing him but not his passenger (P. Morgan, pers. comm. 2001).

"With his death the world of Islamic archaeology lost an increasingly experienced and able scholar and a man of outstanding dedication, toughness and courage" (Allan, 1987: 7).

"His untimely death prematurely ended a short but brilliant career..." (Prickett, 1986a: 15).

"His experience...may be fairly claimed to have been unrivalled before or since for this region and period" (Sumner & Whitcomb, 1999: 316).

Posthumous Work on the Collection

Following their son's tragic death, Williamson's parents donated the finds that had been shipped back to the United Kingdom from the survey, along with the documentation that accompanied the collection, to the Ashmolean Museum in Oxford (Allan, 1987: 8).

The finds in this group, excluding those from the Sirjan and Tepe Dasht-i Deh excavations, amounted to around 17,000 sherds of pottery, c.5,000 shards of glass, c.60 coins, c.80 stone objects and a few pieces of shell, wood and metal.

For a time, Prickett considered re-examining the Collection and bringing together a publication of the survey in honour of, and as a memorial to, the man that she had worked with so closely. Towards this end, she made a review of where different parts of the collection were stored and made enquiries about a number of missing elements (Prickett, 1975). The project though "hung around [her] neck" (Letter 22), as one might well imagine, and in the end, after finally finishing off her own thesis in 1986, she relieved herself of the difficult undertaking, moving out from the field of Iranian archaeology and embarking on a new area of research in Sri Lanka. In 1981, work was resumed on the Williamson Collection by Peter Morgan and Janet Leatherby with funding from the British Institute of Persian Studies and the support of Mr and Mrs George Williamson (Allan, 1987: 8). Being unable at that time to gain the full publication rights to the survey, they decided to focus on the important collection of material from Williamson's excavation at Sirjan (Letter 1; P. Morgan, pers. comm. 2004). This work was spread out over a number of years and culminated in a useful publication, which includes a detailed discussion of the site and a catalogue of the main elements of the ceramic collection that were exported to the UK (Morgan & Leatherby, 1987).

Between 1988 and 1990, Morgan continued to work on the Collection with further funding from the British Institute of Persian Studies, revisiting the site of Tepe Chahah or K103 in the Minab plain. The work focused on the large collection of East Asian pottery that Williamson collected from K103; a site that Williamson apparently argued could be identified with the city of Old Hormuz (P. Morgan, 1991: 29), the influential trading port and major seat of power in the medieval period before Hormuz was moved out to Jarun Island in the early 14th century.

Other significant work that has been undertaken on the Williamson Collection includes an examination of the material, made in 1988 by Axelle Rougeulle during her doctoral research on East Asian trade in the Persian Gulf during the Early Islamic period. In this research Rougeulle made the first attempted to reutilise the results from Williamson's

main coastal survey. Sherd counts by site were generated from a Card Index of finds held in the Collection Archive for a range of Early Islamic ceramic classes including locally manufactured wares and imports (Letter 23). Selected sites were examined within most of the coastal areas, including Regions A, B, D, F and H, occupying the area between Bandar Abbas and the Bushehr peninsula (Rougeulle, 1991a: fig. 16-20). For Region K: the Minab plain, only East Asian wares were counted (Rougeulle, 1991a. 15). Using this data, Williamson's ware descriptions, and dating criteria that are not specified, a series of maps were drawn up presenting the changes in site distribution over four periods: Sasanian, 8th - 11th century, 12th - 14th century and post-14th century (Rougeulle, 1991a: fig. 21-24). These maps provide some evidence for an increase in the number of sites on the coast between the Sasanian period and the modern era, but with a lull in the period from the 12th - 14th centuries and a particular increase in settlement after the 14th century in the area from Bandar-i Lengeh to Bandar Abbas.

The research that Rougeulle conducted on the Williamson collection was integrated into a broader review of the archaeological and historical evidence for East Asian trade from the 9th - 14th centuries from the Persian Gulf, Arabian Peninsula, Red Sea and East Africa (Rougeulle, 1996). This research represents one of the first attempts to synthesis the evidence for East Asian imports in the western Indian Ocean as a whole. Using the data that Rougeulle collected, she was able offer a range of suggestions relating to the changing structure of trade within this period. During the 9th - 10th centuries, a period when long-distance trade in the western Indian Ocean increased significantly, trade appears to have been in the hands of Islamic entrepreneurs, handling voyages to East Africa, the Red Sea, India and East Asia. During the 11th - 12th centuries, trade in the region underwent a transition as a result of structural changes in the power base of the Islamic world; namely the decline of the Abbasid caliphate and the rise of the Fatamids in Egypt. Within the Persian Gulf this never appears to have resulted in the complete collapse of trade, however, there is evidence that its main centres shifted. The most striking change that appears to have occurred between the earliest phase of East Asian trade in the area and the pre-European conquest period was:

"...from a free economy handled by private traders, mostly based in the main emporia of the period...but involving also nearly all minor settlements on the Iranian coast, to a monopoly economy concentrated in the hands of some local rulers"...(Rougeulle, 1996: 175).

While Rougeulle's 'brief analysis' of the Williamson Collection (Letter 23) is unique in the fact that she is the only person so far to have successfully extracted data recorded on the Index Cards and combined it with a wider synthesis of available evidence, what she does not do, and deliberately so, is to make any attempt to quantify these differences, or even to provide standard measures or perimeters for comparison of the changes being described. While there may therefore be a sound historical basis to the arguments that have been put forward on the changing structure of East Asian trade in the region, the archaeological evidence for these processes has still not been demonstrated. In addition, and perhaps even more importantly, there is no indication from Rougeulle's synthesis of the scale of East Asian trade and how this may have varied between regions or changed through the course of time. Given the difference in technique adopted during Rougeulle's analysis of the Williamson Collection and that adopted here, it will be interesting to see how the two sets of results eventually compare (see Chapter 4).

A further piece of significant research that has been undertaken on the Williamson Collection since it was entrusted to the Ashmolean Museum is that related to the Marv-Dasht survey. When Andrew Williamson first went to Iran, all of the Sasanian and Islamic sherds that William Sumner had collected during his 1967-69 survey of the Marv-Dasht area were handed over to Williamson, as these fell outside Sumner's main area of interest and expertise. The material was mostly comprised of a group of handmade painted wares, which Sumner had originally believed to be prehistoric. The common occurrence of these wares on Islamic sites led him to realise, with time, that the material had a medieval origin. Recognising this, Sumner named the group 'Madabad' ware, after the main type-site, and handed the sherds over to Williamson for study (Letter 27). Williamson made some preliminary research into the group, and may have been amongst the first to realise the widespread occurrence of this particular phenomenon of a tradition of handmade painted wares, which emerged across the Middle East from Egypt to Afghanistan from around the 11th - 13th centuries (Letter 30). His work on the material was never published, and it was some years later before it was first presented (Whitcomb, 1991; Johns, 1998).

In addition, Sumner also gave Williamson a list of 210 Sasanian and Islamic sites that he had encountered, which Williamson and Prickett later revisited in order to collect samples and take measurements (Williamson, 1970b: 206). At the same time,

Williamson worked on a periodisation for the Marv-Dasht sites based on available dating parallels from Siraf and from his own collections off the excavation spoil heaps at Qasr-i Abu Nasr and Nuqsh-i Rustam, which he used to categorise the sites that they revisited (Williamson, 1969). Most of the material from the Marv-Dasht survey collected by Sumner and Williamson appears to have been left in Iran (Prickett, 1975). The exception to this is a single box (No. 36) labelled "Marv-Dasht Survey, Mostly Painted Istakhr etc", containing 191 pseudo-prehistoric handmade painted ware sherds, which Williamson brought back to the UK and deposited with the rest of the survey collection. This may actually be the original batch of material that Sumner entrusted to Williamson.

When Williamson died, the responsibility and rights of publication once more returned to Sumner and he handed the task over to his former student, Donald Whitcomb, to work on as a part of his doctorate research into the Istakhr excavations and evidence from the surrounding area. Whitcomb developed the Marv-Dasht results further by combining Williamson's notes with Sumner's field observations and Schmidt's aerial photographs of the area to provide a regional view of settlement change that could be linked closely to the development of the neighbouring city of Istahkr (Whitcomb, 1979). More recently this information has been combined with topographic information recorded in the survey archive to provide a more detailed analysis of changing settlement patterns in the Marv-Dasht area (Sumner & Whitcomb, 1999).

Most of what is contained in the Williamson Collection from the Marv-Dasht survey, is a single class of pottery, rather than the full range of the Sasanian and Islamic period material that Williamson worked on. As a result, it is not possible to use the Marv-Dasht area to consider the general distribution of wares as it is for the other areas of the survey. The only useful application of the material in the present context is in relation to the distribution and definition of handmade painted wares from the medieval period. When Prickett considered working on publishing Williamson's survey material, she regarded the Marv-Dasht survey as not being strictly Williamson's domain, and decided that she would concentrate on the core of the survey for which he assumed primary responsibility (Letter 22). While the analysis based on Williamson's inspection of Sasanian and Islamic sites in the Marv-Dasht area casts interesting light on the way that he worked and provides a rare glimpse of the dating criteria that he adopted, the results

from the Marv-Dasht survey are essentially an appendage to the core of his survey and are probably better dealt with as a separate subject, as Prickett suggested.

Problems with the Survey Data

There are clearly a number of problems with reconstructing Williamson's survey and making use of the evidence that he collected. Most of the difficulties stem from the fact that Williamson made little attempt to record the ideas that he was building up, as he must have believed that he would be the one responsible for making sense of the Collection and presenting his findings in the future. The attempts to make use of the survey since the time of his death have followed different approaches. The work by Morgan and Leatherby focused on specific aspects of the collection. Whitcomb used the raw material provided by Williamson, but looked only at one specific area of the survey; an area for which other independent information already existed. Rougeulle is perhaps the only person who has so far attempt to extract information from Williamson's main survey and to develop interpretations based upon it, but she attempted only a superficial extraction of specific data from the Collection rather than a full evaluation of Williamson's work. While Rougeulle's attempt appears to have been reasonably successful for the amount of time she invested, there is much more information that she did not use. The lack of a comprehensive attempt to deal with the Collection so far is a waste given the huge investment of time, resources and initiative directed towards this research and the sheer extent of the area actually covered. A survey of this scale, rivalled in Iran only by the work of Stein and possibly Herzfeld[4], and of an intensity never before or since attempted in southern Iran must stand amongst the most ambitious survey projects undertaken anywhere in the Middle East.

If the full potential of the survey is to be realised, then the next stage is to reach a clearer understanding of the theory and methodology behind Williamson's investigation. This stage is necessary in order to recognise the limitations of the Collection and to be able to determine how the Collection can most appropriately be used and what type of analysis and interpretation it is capable of supporting.

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[4] Herzfeld's surface collections from Fars and Western Iran have never been worked on or published, although there are said to be 1,700 marked linen bags containing his surface collections of sherd material stored in the Islamische Kunst section of the Staatliches Museem in Berlin (Simpson, pers. comm. 2003, quoting from a paper delivered by Jens Kröger entitled: 'Ernst Herzfeld and Friedrich Sarre' at the symposium on Ernst Herzfeld and Development of Near Eastern Studies 1900 - 1950 at the Freer Gallery of Art and Arthur M. Sackler Gallery, May 3rd - 5th 2001).

1.2 PRINCIPLES AND TECHNIQUES OF THE SURVEY

Survey Methodology

In order to evaluate the scientific potential of the Collection, it is necessary to have a clear understanding of the methodology that Williamson employed. This is made difficult because Williamson never provided a detailed account of his methodology. In addition, it is clear that the methodology that he used was adapted depending on the situation and that it evolved during the course of his research. Due to these 'working modifications', it not always possible to make generalisations that cover all aspects of the work and it is important to consider different areas of the survey as well as the various techniques employed at different times. In essence though, the method that Williamson used was similar to that adopted by many of the field researchers working at that time. Such a technique is what has been called 'standard survey' (Sajjadi & Wright, 1990: 1) - a method also employed by the Iranian Centre for Archaeological Research in the fieldwork that they carried in the Bard Sir Valley amongst other places. Essentially this involved opportunistic and intuitive methods of site location and finds selection, combined with attempts to standardise general procedures.

Such an approach can be contrasted with more intuitive forms of survey such as that undertaken by Stein. The differences between Stein and Williamson's work have been explored in detail elsewhere (Priestman, 2004). Stein's methodology is typical of a school of survey stemming from an antiquarian tradition, in which research objectives were limited and the main concern was simply with documenting relics and sites. What was unusual about Stein's work was the sheer scope of his research and the rigor with which the documentation was carried out. The main difference marked by the approach that Williamson was able to pioneer, was a combination of traditional methods of site location with attempts to sample particular chosen areas, test historical and archaeological problems and to estimate and record data such as site sizes or surface materials in standardised and systematic ways. Despite these advances, Williamson never carried out controlled area coverage or surface collections through grid walking, transects and other forms of intensive area coverage, such as have been applied in Mediterranean, and more recently in Near Eastern archaeology (see Wilkinson, 2003). With GPS receivers, such techniques are becoming increasingly feasible, but even had such approaches and technology been available to Williamson, they would not have

been amenable to his aims, which were to provide preliminary and rapid coverage of an ambitiously large area.

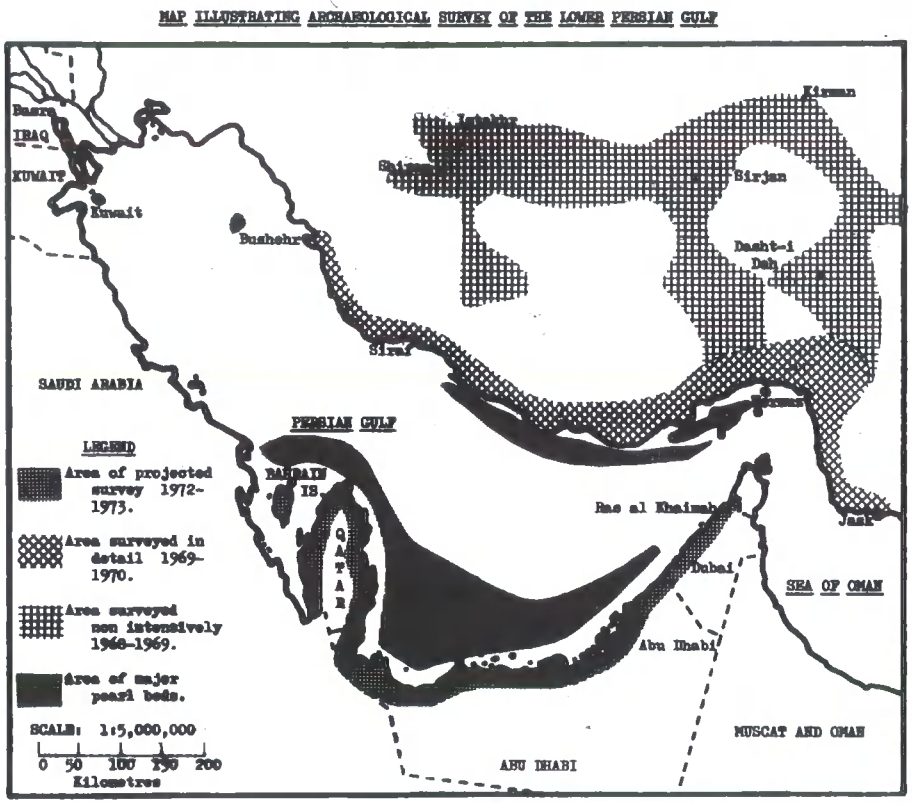

Fig. 1 *A map prepared by Williamson showing the areas surveyed 'intensively' and 'non-intensively' between 1968 - 71 as well as the areas that he intended to survey if he had taken up Randall MacIver Junior Research Fellowship at Queens College, Oxford, to research the history of pearling in the Persian Gulf.*

At a general level we know that Williamson's survey was carried out in two broad phases: the first, covering inland Fars and western Kerman with a reconnaissance of Sistan at a 'non-intensive' level, except in the Marv-Dasht area and around Sirjan, which were probably covered more thoroughly (Williamson, 1970b: 206). The second phase of the survey was carried out along the Persian Gulf coast at a more 'intensive' level (Fig. 1). This distinction has been discussed elsewhere (Priestman & Kennet, 2002: 265, fig. 1). We know now that such a straightforward dichotomy within the survey does not tell the full story. The later part of Williamson's survey in fact involved some intensive aspects, particularly in the Minab and Bushehr areas, as well as further non-intensive reconnaissance of inland areas of Kerman, through the Jiroft and Daulatabad plains and back over the area around Sirjan and between Sirjan and Shiraz (Table 2). In addition, some of the work on the coast would have been directed towards

extensive pick up at particular points, while other parts may equally have been designed only to take further site measurements, improve descriptions or to take additional photographs. One must therefore see all aspects of the project as a multi faceted exercise and the process of pick up as being constantly under review.

Site Identification

Despite the differences in intensity of survey within the various sectors that were covered, the basic method of site identification appears to have remained essentially the same. This involved driving slowly across the landscape, checking areas that appeared likely to yield evidence of past human activity, or areas that bore visible signs of such activity in the form of upstanding remains or surface accumulations of cultural debris. Because the work was done by Land Rover, and motorbike in some places (Williamson, 1971h: 1), this would have placed a basic limitation on the areas that could be covered logistically. Such techniques of survey can be predicted to find settlements with more than one period of occupation or sites with solid architecture. It is very likely though to grossly under-represent low single-period sites, scatters, graves, 'nomad sites' and manuring scatters. Although Williamson himself did not provide an in depth account of this work, we are fortunate in the fact that Prickett, in her thesis on her own intensive survey of the Shah Maran-Daulatabad basin, gave a detailed account of her methodology and compared it closely to the work that she and Williamson conducted together (Prickett, 1986a: 474-516).

In Prickett's account she describes the way that they surveyed, mostly along motorable routes, taking short cross-country divergences off that route wherever possible (Prickett, 1986a: 511). As a result, the ability to cover an area thoroughly was largely determined by the local topography and vegetation cover. Similarly, the ability to identify sites was influenced by the same factors. In areas with dense foliage cover, much more time was needed in order to achieve a comparable level of coverage to that achieved in a fraction of the time in open landscapes (Prickett, 1986a: 513-14). Another factor that influenced site recovery was weather conditions. The limitations that these imposed ranged from restricted visibility during dust storms, to preventing access to certain areas during flash flooding. Conversely, after a period of rain it became easier to spot artefacts on the ground and therefore finds recovery would probably have been enhanced (Prickett, 1986a: 487-88).

Once a site had been identified, additional time would then be spent walking around the site and its surrounding area. As a result, the likelihood of finding further sites within the same locality was increased, particularly less noticeable categories of site that might otherwise have been overlooked. There is therefore a direct correlation between areas that were walked over because of the presence of conspicuous sites and the recovery of less obvious archaeological remains. Prickett was able to provide evidence that usefully illustrates this. During the first visit that Williamson and Prickett made to the Shah Maran-Daulatabad area, just four to five hours were spent recording sites within the area. Later when Prickett carried out her own intensive survey of the area, between 1973 - 1975, the time spent surveying was increased to around seven hundred hours. At the end of this only 50% more mounded sites had been added to the total originally identified, whereas the number of sherd scatters had increased by 100% (Prickett, 1986a: 490, table 4.1). The predominance of large, high visibility sites in Williamson's survey can be predicted from the methods that he used. To some extent this bias has also been attested by a preliminary inspection of the photographs contained within the Collection Archive.

In comparison to the inland survey, the correlation between the local topography and areas of past human activity in the coastal area may have been easier to interpret. Essentially the work would have involved exploring areas of modern settlement, natural harbours, coastal planes and any of the accessible valleys leading further inland. From the distribution of sites so far relocated, (Fig. 3), it appears that the coastal survey rarely penetrated any great distance inland (around 50km at the most), though this in itself is mostly a reflection of the geography of the coastal plain. During the inland survey the strategy may have been somewhat modified, being restricted mostly to rapid coverage of long valley systems and in some cases expansive basins and plains within which only the most prominent sites would have been identified, although some smaller ones might have been noted in the vicinity of larger ones, as has already been discussed. Two areas of the survey appear to have received a somewhat different type of treatment. One is the area from Bandar Abbas to Kuhistak and inland as far as Serendik, occupied by the Minab plain, and the second is the Bushehr peninsula.

In the first, two types of landscape appear to dominate this area: extensive open mud flats within the plain, and dense palm gardens further inland. At least two and a half

months, probably closer to three, were spent surveying the Minab plain during a number of separate visits, the longest being over an eight week period (Prickett, 1986a: 513). This represents by far the longest time spent within a single survey region and reflects partly the quality of the sites identified in the area, and partly the good relations that Williamson was able to build up with local officials in the area (Letter 36). Prickett describes the work as involving much time spent carefully criss-crossing the area by Land Rover, conducting surface pick ups from each of the sites that they encountered. The overall impression that she received of the area was that unlike some of the inland regions, very few mounded sites were present. Instead, the sites tended to be smaller, much more dispersed and constructed from ephemeral materials like palm frond and wood (Prickett, 1986a: 515). The palm gardens in particular, represented a difficult area to cover as visibility was poor, many sites were covered in vegetation and vehicle access was difficult. Palm gardens also tend to be very disturbed environments where sites have often been buried or removed entirely. Despite the potential for major differences in the intensity of area coverage between the palm garden zone and other areas of the survey, Prickett suggests that the differences are partially off set by the increased time spent in the area (Prickett, 1986a: 513-14). Such an argument becomes more difficult to sustain when one considers the very high proportion both of sherds and sites the Minab area compared with other regions in the Williamson Collection (see Fig. 13 & Fig. 14 below). Such an imbalance suggests that the added time spent in the Minab area resulted in the more complete coverage of the area, as one would expect.

Considerable time was also invested in surveying sites on the Bushehr peninsula. Although the area itself is relatively small and isolated from the mainland with no natural water sources, the dense archaeology, particularly from the Sasanian period, concentrated around this naturally favourable place of settlement attracted Williamson's interest. In total, as much as a month may have been spent investigating the area, spread out over three visits, during which as many as 201 sites may have been identified, although just 88 are have so far been identified from the sherd collection and Card Index of sites. Unlike the Minab plain, the Bushehr peninsula presents a relatively open landscape in which sites would have been easy to identify. At the same time, the area provided its own limitations, including large areas that were off limits because of sensitive military installations. There were also greater time-costs involved in working in the area as detailed schedules had to be set out of where and when he intended to

work (Williamson, 1971g; 1971f). Apart from the Minab plain and Bushehr peninsula, most of the rest of the coastal area covered during the survey provided an arid landscape with little vegetation cover, advancing site erosion and a sparse modern population - all conditions suitable for site identification and artefact recovery (Williamson, 1971i: 3).

In addition to reconnaissance methods, historical documents along with more recent explorer/archaeologists' accounts provided other means of site identification. There were a number of different aspects to this kind of work. The most straightforward involved revisiting sites that had already been documented relatively recently, in particular those associated with the investigations of Stein and his surveyor Muhammad Ayub (Stein, 1932; 1935; 1936; 1937; 1938; 1940) and those of Sykes (Sykes, 1902). Stein's work was particularly significant, and probably provided the lead that first drew Williamson to Jiroft and the Minab plain. Antiquarian accounts, particularly those related to Bushehr, may also have been important, although Bushehr was also described in some detail by Stein (1937: 234-241). Another way that Williamson employed documentary sources was to conduct survey in areas that might yield evidence of places referred to in historical texts, which had since been 'lost'. Examples of this include the city of Rishahr, which he linked to the Sasanian city of Rev Ardashir, and his search for the medieval cities of Old Hormuz and Sirjan. Finally, we know that Williamson made extensive use of the Arab geographers' accounts, which listed the main town and the distances and routes between them. One of the main objectives of the inland work conducted in Fars and Kerman was to survey along the trade routes described in historical sources, in search of sites that might have been associated with them.

Vehicular Survey

Some of the strengths and weaknesses of vehicular survey have already been referred to in relation to area coverage and site recovery. It is also worth drawing some comparison between this form of survey and that which went before it, particularly the work of Stein, who covered many of the same areas as Williamson over thirty years earlier (Priestman, 2004). Where Williamson's method departed most significantly from Stein's was in the reduction of resources required. Instead of a whole caravan of retainers and supplies, Williamson was able to work either on his own or with one other helper/companion, travelling by jeep or motorbike over considerable areas, carrying all of the necessary materials and supplies that were needed. As far as limitations were

concerned, he would have been bound to the routes accessible by road and track much more than his predecessors who travelled on foot. What the use of vehicular transport brought though was the ability to cover large areas rapidly and at a comparatively low cost. One sees the effect of this when comparing Stein and Williamson's coverage of the same areas. Whereas Stein followed a single continuous route, in the manner he describes: a reconnaissance, Williamson was able to rapidly cover an area building up an initial assessment, and then return to those areas that he was particularly interested in to collect further samples or to inspect the area more thoroughly. What this enabled Williamson to do, through the course of his work, was to build up an increasingly sophisticated approach to area coverage and site sampling.

Other advantages of the Land Rover include the ability to move all of the required equipment directly into and out of the 'theatre of operation'. This included: cameras, film, levels, measuring apparatus, etc, as well as the finds picked up along the way. Carriage facilities also extended to basic supplies and amenities such as: food, fuel, water, tent, cooker, bedding, etc. Finally, the vehicle itself provided a useful elevated platform for photographing sites and for prospecting in particularly flat terrain, as well as shelter from many of the harsher elements (Prickett, 1986a: 481-82). While the Land Rover effectively combined many functions, it also produced a number of very real limitations. The most serious of these was the fact that the carriage capacity was restricted. As a result, a balance always had to be stuck between the quantities of supplies carried and the size of surface samples collected. This meant that the work was always restricted to some extent in terms of the duration of time that could be spent away from places where supplies could be procured. At the same time, during site sampling careful decisions would have needed to be made regarding which materials to retain, and in what quantity. Presumably these concerns would have increased when working in more remote areas, further away from the next finds drop off point; a factor that may have produced further sampling inconsistencies.

Site Recording and Sampling

Wherever possible a uniform procedure of site recording was followed. Each site was assigned a number, usually serially in order of discovery. All site numbers were prefixed with a letter, representing the survey region where they were found. Sub-divisions of the site number using letter suffixes were also sometimes used to represent

subsidiary mounds or sherd scatters (Prickett, 1986a: 429). This might also include separations between groups of materials that clearly had no chronological association, but which were found in close proximity. Local site names were used, where applicable, although there were many sites that had no local name, or where no local name could be determined. It was also recognised that their use may cause certain complications. For example while some sites may have no name, others may have multiple names or a number of sites may have the same name. For this reason, Prickett generally avoided using place names during her intensive survey in 1973-75 (Prickett, 1986a). During the Williamson/Prickett survey, about 30% of the sites appear to have been assigned a local place name. A short account of the site recording procedure that Williamson himself provided states that; "all sites are recorded in terms of location, dimensions, character of habitation, and resources, and a large sample of artefacts [are] collected from the surface" (Williamson, 1971c: 1). Each of these aspects shall be dealt with in turn.

The position of sites was recoded by three-point triangulation using a prismatic compass, which measures to an accuracy of 0.5°. Bearings were taken from major topographic or man-made features marked on the available maps of the area. These included the 1:253,440 British Survey of India series, published in 1942, and the 1:100,000 Iranian Gendarme series, published in c.1968. Neither of these sources provided extensive detail, but they were the only map sheets available for the area at that time (Prickett, 1986a: 493-94). The use of the 'Gendarme' series has been suggested by others (Letter 28; Letter 29), and is confirmed by Williamson during a short discussion on the marking of certain place names (Site Card 3: 40). Other sources that are indicated are the British War Office and Air Ministry 1:1,000,000 series, published in 1963; an incomplete set of which was found in the Collection Archive. A further unknown source is indicated by the presence of three adjoining 1:50,000 map sheet tracings of the Minab area marked with relevant toponyms, also contained in the Collection Archive. Having established the location of sites on one or other of the available map sheets, details regarding their position were recorded in a series of field notebooks. The possibility also remains that site positions were marked onto a field base map, but this has not yet been confirmed.

Site dimensions were established by measuring the longest axis across the site multiplied by the maximum distance at right angles to the first line. This method

provides a high estimation of site size. Where sites were particularly unusually shaped, the site was broken down into convenient units. Each area was then measured separately with the values being combined at the end to provide a total area estimate. This method was the same as that favoured by Sumner and Adams (Prickett, 1986a: 495). Distances across sites were either estimated, or measured out roughly in paces, with a correction factor being applied at the end based on an average stepping distance, in order to take into account changes in pace length produced by inclines and declines in the surface, or deviations taken around minor obstacles. Longer distances were often recorded using the Land Rover odometer, which recorded down to a tenth of a kilometre in accuracy. There were some problems using this system, namely the fact that it was not always possible to drive in a completely straight line across a site, as well as minor changes produced in the measuring apparatus when speedometer cables were changed. The method did however provide a rapid means of producing general distance estimates. The height of features was mostly estimated, though a level was used occasionally when a more precise recording was required. Checks were run from time to time to assess the accuracy of height estimates. These showed that heights under 3m could be estimated with a fair degree of precision, but that over that height the level of accuracy decreased (Prickett, 1986a: 498-500).

In Williamson's description of the site recording procedure, he states that the 'character of habitation, and resources' surrounding sites were recorded (Williamson, 1971c: 1). Prickett describes these factors at length in relation to her own survey. In fact, the inclusion of these elements may have been one of the contributions that she made to Williamson's survey procedure. For her, as was indicated earlier, archaeological sites could be understood primarily in relation to their environmental setting; thus factors like the surrounding soils, vegetation cover, and most importantly natural or artificial irrigation were seen as the main factors dictating the growth and distribution of human occupation. Williamson would undoubtedly have taken these factors seriously, though his training and academic orientation was historical and it was therefore natural for him to pay greater attention to the socio-cultural factors. This tendency clearly can be seen in his attempts to trace settlements along known trade routes, or to look at settlement patterns in relation to the growth of major trading entrepôts within the Persian Gulf. Prickett states that the recording of environmental factors was carried out at a much more cursory level during the Williamson/Prickett survey, a fact that she mostly

attributes to the greater speed with which they worked (Prickett, 1986a: 510). This appears to be confirmed by an inspection of the Collection Archive, which contains almost no information on site environment and only the crudest details relating the nature of habitation, including designations such as 'fort', 'mound' or 'scatter'.

The last factor that Williamson describes, the selection of artefact samples, is together with the issue of site identification by far the most important aspect of the methodology in relation to the analysis and interpretations that will be developed here. Williamson describes the samples that he took as 'large' (Williamson, 1971c: 1). Probably there would have been considerable variation in sample size depending on the nature of the area under investigation. Prickett provides more detail. No attempt was made to systematically grid sites, or to collect controlled samples. Finds were collected during careful criss-cross walking over the site surface. The finds were then sorted while still on the site, and notes were taken on the main types present as well as on estimated site dates, areas of particular artefact concentration and other interesting features. Kiln debris, including wasters, tended to be collected more thoroughly and given greater attention, in an effort to identify specific production centres for particular wares. Once the sorting and descriptions were complete, a selection of the most diagnostic pieces of pottery was made including rims, bases and distinctive body sherds, as well as pieces that appeared to be particularly unusual, or pieces that would be useful for illustration. At the same time, there were "frequently sherd types [that] were only observed and recorded, and not gathered" (Prickett, 1986a: 503). The selection does not therefore "necessarily represent the full range of sherds or dates observed on the site itself. This is unfortunate because it prevents reassessment of site data from the artefact collections" (Prickett, 1986a: 509). A minimal collection strategy had to be adopted, however, due to the limitations imposed by the available carriage facilities and possibly the available allotment of space granted for post survey storage. The decision to take minimal samples was also made in order to prevent excessive sampling. It was felt that the purpose of the survey was only to provide a rapid overview of the area and that mapping complete sherd distributions should be left until more detailed questions emerged. The main purpose of the initial sherd collection was for site dating purposes (Prickett, 1986a: 503). Interestingly only 6% of the sites from the Region R (the Shah Maran-Daulatabad basin), visited by Williamson and Prickett in 1971, were re-dated during Prickett's subsequent and much more detailed work on those sites carried out

between 1973-75. Where there was a date change, it only involved a shift of one period, and almost all of these were changes that took account of the finer chronology developed for the prehistoric period (Prickett, 1986a: 504). This suggests that the initial aim of site dating may have been reasonably successful.

Value of the Data

As Prickett notes, the fact that standardised sampling procedures were not adopted makes it difficult to be sure how representative the collections are of the reality on the ground. Saying this, it seems improbable that some attempt would not have been made to collect material representative of the main classes encountered, even if the full range of classes were not necessarily represented. What is clear is that Williamson's approach to pottery involved the use of survey evidence to build up an increasingly sophisticated typology of different classes and forms, at the same time as working on their spatial distribution. In order to do this he would have been impelled to retain examples of particular wares, for comparative purposes if nothing else. In addition, if his aim was to date sites on the basis of survey data, then he would surely have selected material that appeared to be representative of the general site date and not just those pieces that were particularly unusual. At the same time, it is clear that Williamson did not focus on every ware that he encountered. Instead, what he appears to have done is to build up information on specific period indicators, or type fossils, based on groups that were distinctive and which presented some uniformity, and then to accrue information on these groups including their dating, definition, distribution and likely place of production. This approach is logical and similar to that which Jacobsen adopted in Iraq during the 1930s, which was then used and published by Adams in his Diyala survey (Adams, 1965). This methodology was highly influential in Iraq and southwest Iran throughout the 1960s ad 1970s (Simpson, pers. comm. 2004).

If it is true that Williamson's focus was on a range of specific wares and that the pick-up strategy that he adopted was mostly targeted at these groups, as well as unusual pieces, then this has some important implications regarding how best to approach the data. The first significant point to note is that the Williamson Collection cannot necessarily be taken as representing the full range of wares in circulation within any given period. This is unfortunate, as absences in the data can be equally as informative as presences. In the case of this collection, absence of certain wares cannot be regarded

as reliable. A further point that is closely related, is the fact that there is no sound basis for looking at changes in the composition or character of the ceramic assemblage over time, such as the changing ratio of coarse to glazed wares in different periods, or the nature of transition between one technology and another, as there is no guarantee that important elements of such an equation may not in fact be missing. Clearly any such consideration would require controlled samples. Again, this is an unfortunate aspect of the Collection as such changes can be particularly informative. Finally, the collection strategy dictates that any analysis of the assemblage based on quantification would produce results of negligible value. This is not to say that the number of sherds for particular wares has no significance. Clearly, the presence of ten or a hundred sherds of a particular class is stronger evidence for its general occurrence than a single sherd and therefore the numbers of sherds cannot be altogether disregarded.

Having considered some of the potential difficulties associated with the Williamson Collection, some suggestions can also be put forward regarding how it can most effectively be used. One should not let the problems with the data overshadow the fact that the Williamson Collection represents the single largest body of data available for the region. On their own, the 17,000 potsherds from the survey that have been deposited in the UK represent the largest survey collection of Iranian pottery outside Iran. What Williamson achieved during the few years that he worked in the country was the survey of over one thousand sites, stretching across an area roughly equivalent to the size of England, Scotland and Wales combined, and mostly across an extremely hostile terrain, through areas with few amenities and with little logistic support. At the time, and to this day, the amount of archaeological information for this area is meagre or non-existent, yet the reward is great for understanding an area of the world in which critical events have taken place over the past one thousand seven hundred years or so, with consequences that extend far beyond the region itself. The scale of the project is not the only reason for optimism. Returning to the issue of Williamson's methodology and his apparent focus on specific period indicators, it must be remembered that these wares were not selected arbitrarily. If one can first reach an understanding of the wares that Williamson identified and selected during survey, then every potential exists for pursuing the same categories that he identified in order to conduct new analysis and to extract fresh interpretations from the data.

CHAPTER 2. DEALING WITH THE COLLECTION

Despite the scale of Williamson's survey and the significant volume of material that he collected, the Williamson Collection has until now remained generally under-exploited and little known. The attempts that have been made to deal with the material that he exported to the UK have been described above. There may be a number of reasons why the core of the survey has never been tackled before, the overriding factors probably being the sheer volume of the Collection and the impenetrable nature of its organisation. Notwithstanding the faults and difficulties associated with the Williamson Collection, it represents one of the most important archaeological resources for the region, in an area for which no other comparable source exists. Recognising the enormous scientific potential that the Collection holds once fully recorded and analysed, a comprehensive study was begun in October 2001[5].

It should be emphasised that the collection as it was handed down was in a state of disarray and much of the crucial documentation was missing. When the work began, little was known about what the Collection contained, or about even the most basic aspects of Williamson's work, for example, where and how he surveyed, or what criteria he used to select his samples. Many of the details that it is now possible to provide were not clear at the beginning and have had to be pieced together mostly through the examination of letters and unpublished documents in the Collection Archive, the Collection itself and through discussion with individuals who had known or worked with Williamson at the time.

The Collection as it Stood

The finds contained within Williamson's survey collection, housed at the Ashmolean Museum in Oxford, were first presented to the Museum by Williamson's parents shortly after his death (Allan, 1987: 8). Since then the Collection has been transferred from a series of cabinets with labelled drawers into box storage, at which point the labels were transcribed onto the boxes themselves (Allan, pers. comm. 2001). Otherwise, there are

[5] The work was generously supported by the British Institute of Persian Studies. Derek Kennet and James Allan conceived and initiated the project. James Allan kindly facilitated the long-term loan of the Collection from the Ashmolean Museum to the Department of Archaeology, University of Durham, where the work was carried out. The work was carried out by Seth Priestman as Research Assistant to Derek Kennet, who acted as supervisor and over-all project co-ordinator.

no signs that any significant alteration has been made to the storage and organisation of the Collection since it was first deposited with the Ashmolean Museum. As a result, one can be fairly confident that the material as it was presented, owes its form largely to the work of Williamson, and in particular, it would seem, the sorting activity that he conducted in Iran in the spring of 1971. There is also the possibility that further sorting of the Collection was carried out when Williamson returned from Iran towards the end of 1971, before he took up his post as the Director and Antiquities in Oman in 1973.

Having worked through the whole of the Collection, it is now clear what the main principles of Williamson's sorting criteria were. Most of the boxes had been sorted to a certain degree (Table 3). The majority were organised according to survey area and by general ceramic group, i.e. coarse or glazed ware. Exceptions to this include boxes sorted by:

- Specific site (AE40, H94, K103, R101 and Qasr-i Abu Nasr).
- Specific sub-survey (Marv-Dasht and Sirjan surveys).
- Excavation (Sirjan and Tepe Dasht-i Deh[6]).
- Broad ceramic group (Far Eastern wares, painted wares, large incised storage jars, kiln debris, etc).
- Specific ceramic class (Honeycomb, Celadon, Persian Blue and White, Moulded Ware, Sgraffiato, Splashed Glazed Ware and Fine Orange Painted Ware, etc).

The other exception was boxes that had not been marked. Even with these, the material had usually been sorted, mostly according to broad or more specific ceramic class.

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[6] There are around 5,000 sherds from the excavation at Sirjan, which were not transported to Durham as the material has already been satisfactorily dealt with by Peter Morgan and Janet Leatherby. However the excavated material from Tepe Dasht-i Deh has never been worked on or published and was therefore moved with the rest of the survey collection up to Durham. At first the intention was to deal with the material from this site along with the survey, however a decision was later taken to omit the material from the study, as it would be better treated separately as an excavation assemblage. As a result, the material has the same number series as the survey group. This is also the reason why a total figure of 19,445 sherds was quoted for the Collection (Priestman & Kennet, 2002: 265). With the omission of the Tepe Dasht-i Deh material, the survey assemblage now stands at closer to 17,000 sherds.

Mode of box sorting	Boxes	Sherds
No label	51	1698
Area and general class	33	4566
Other	20	3332
Specific class	17	2762
Single site	12	726
Area and specific class	10	2364
Specific survey	9	1458

Table 3 *Primary sorting of material as indicated by the box labels.*

Within the boxes themselves the material was either loose, indicating that the box label applied to the whole group, or had been further sub-divided into bags. Again, the groupings represented within the bags fall into a number of different categories. Sometimes the basis for the grouping was indicated by a label written onto the bag itself or onto a piece of paper that had been inserted into the bag. Most bags had no labels, though in the majority of these cases it remained self-evident why the grouping had been made. The main types of bag grouping are listed below (Table 4). As can be seen, there are an almost equal number of bags containing material organised by site - i.e. more or less in the condition that it was originally collected - and bags organised by ceramic class. The quantity of bags organised by class increases when one takes into account those bags grouped by site and class. Most of the class groupings that had already been established, represent only a broad level definition, such as painted wares, frit ware etc. Others contained material that had been sorted down to a more precise level, and in some cases the same groups have been maintained in the classification presented here. Probably the most detailed level of sorting represented in the Collection was bags organised by type or form. These mostly belong to coarse-wares. Even in these groups the range of fabrics represented within a type often appeared to be too wide to make the definition meaningful. In some cases it was very difficult to see why the group had even been created.

Sorted By:	Qnt.
Site	242
Class	220
Mixed or Not Clear	193
Site and Class	143
Survey Area	99
Type (form)	90
Same Vessel	22
Unmarked Sherds	7
Kiln Debris	5

Table 4 *Categories of sorting represented by the bags*

Clearly there were useful aspects related to the sorting of the Collection that had already been provided by Williamson, and they are in themselves one of the few potential insights that one might hope to gain into the classification system that he was working on, in addition to those aspects that he published. At the same time, because the Collection was organised according to a number of different principles, it seemed that the only way to begin the process of making sense of the Collection as a whole was to embark on the very time-consuming process of resorting the material in its entirety. In carrying out this task, great care was taken to record exactly where and in what way the material had originally been organised in order to ensure that none of the information relating to Williamson's classification of the material would be lost.

2.1 METHODOLOGY

Sherd Numbering

The first stage of the work on the sherd collection involved numbering each piece. An ascending serial number series was applied across the whole collection. The numbers were carefully marked onto every sherd in black Indian ink using an ink pen. Every number was prefixed with a "+" symbol to ensure that it could be clearly differentiated from previous markings that had been made. This process took about two months to complete. Although the expenditure of time on this process was considerable, it was felt that the measure had to be taken in order to be able to record the exact position of each object within the collection, in terms of the box and bag that it had originally come from. It was also felt that having the objects individually numbered would be of great benefit at a later stage, in terms of being able to identify the unique position of every object within the catalogue and finds database. Similarly, all of the boxes that the finds

were stored in were numbered and the label information transferred into the Collection Database.

Initial Catalogue

Once all of the sherds had been numbered, the next stage involved entering basic details relating to each sherd into the Collection Database. Various categories of information were recoded including:

- Sherd number
- Site code
- Whether the sherd was a rim, body or base
- Whether the sherds came from an open or closed vessel
- Box number
- Bag number
- Ceramic class
- Specific comments and notes

It was at this stage that the information on Williamson's original sorting was recoded. Each bag that was encountered was given a number unique to the box that it came from and that number was added onto the record for each of the sherds that came from that bag. At the same time a separate table was kept listing each of the bags, any label information they contained and a description of what type of sorting category the bag represented.

During the initial run through, the material was also sub-divided into broad ceramic classes. The aim at this stage was not to achieve precise groupings, but instead to group together material that was broadly related. Forty-nine sub-divisions were made. In some cases these did represent recognised classes; mostly those that were either well-known or particularly distinctive, such as Honeycomb Ware, or Fine Orange Painted Ware. In other cases a broader grouping of closely associated wares was made, for example: Sgraffiato, Slip Painted Ware or Alkaline-Glazed Ware. With the coarse-wares, the material was sub-divided crudely based on fabric colour, corresponding to elements within the fabric, particularly iron, and the degree of oxidation or reduction the vessels had received during firing. Although it was acknowledged that both oxidised and

reduced tones can be represented within the same ware across separate firings or even within a single firing, broadly speaking, single industries/traditions will use a standard firing technique yielding a limited range of colour variation. In any case, the aim at this stage was to break the material down as rapidly as possible, and working with fabric colour provided the most efficient means of dealing with the hugely varied coarse-ware assemblage. Notwithstanding criticism of this approach, such an approach has also been considered to yield valid information on crude temporal changes in firing technology in other regions, for instance work undertaken by the British Archaeological Expedition to Iraq in the Zammar region of the Eiki Mosul (formerly Saddam Dam Project) or at Merv (Simpson, pers. comm. 2004). The initial catalogue of all of the sherds took five months to complete.

Site Location

Before the present phase of work started on the Williamson Collection Project, very little was known about the location of sites or the full extent of the area that had been surveyed. Although some of the sites had already been relocated (P. Morgan, 1991; Rougeulle, 1991a; 1991b; 1996), the lack of a comprehensive list of sites and site locations remained a major limitation. A significant aspect of the work that has been undertaken was aimed at addressing this problem. The first stage of the work involved making a thorough inspection of the archival material accompanying the Collection. One of the things that quickly became apparent was that there was no base map marking the position of sites, a conclusion that was also reached during the first major inspection of the Collection (P. Morgan, pers. comm. 2001). It is difficult to believe that Williamson did not at some point produce annotated maps of the sites that he visited and collected from, and in fact it has subsequently been learned from two separate sources that he did produce such a map (Prickett, 1986a: 493; Williamson, 1971c: 1).

During protracted attempts to track down this material, our investigation did finally meet with success when it was learnt that documents associated with the Collection had resurfaced in America. These are currently in the care of Carl Lamberg-Karlovsky at Harvard University (Kennet, pers. comm. 2003). Unfortunately, it has not yet been possible to check these records, although it is strongly suspected that they include the missing materials mentioned above. The existence of these documents should vastly

increase the scientific potential of the Collection and the study of this material should remain a key objective of any future research undertaken on the Williamson Collection.

The first objective in the present investigation has been to establish how many sites were recorded during the survey. In order to do this it has been necessary to carry forward two aspects of data recording and assimilation practically unthinkable without the use of modern computer technology. The first prong of the research involved the manual inputting of data into a database from 1,799 cards contained within the Card Index of sites. The Card Index includes a number of different types of information: some cards have bibliographic references and others have site location details. Most however are site inventory cards headed by a Site Code, a toponym in some cases, and a list of sherds that were picked up or at least recorded from that site. The Site Codes are composed of a letter prefix, which corresponds to the survey area or Region, followed by a number assigned to each of the sites within that Region. Some Codes also have a letter suffix representing sub-sites or sub-areas. Inputting the site information from the Card Index was completed over a period of three weeks.

The second line of information that was available came from the Site Codes that had been marked onto each of the sherds and entered into the database of sherd records. For a substantial number of sherds, these codes were either missing or had been effaced due to salt corrosion or the fragility of the material. In such cases, it was often possible to infer the original marking where a sherd had been bagged or boxed according to a specific site or Region. While at the same time preserving a record of the doubt factor, it has been possible to proceed with reasonable confidence and reduce the number of entirely unprovenanced sherds from 1,249 to 854 out of a collection of 17,000 pieces.

One of the aims of the initial sherd catalogue (described above) was to provide a complete list of the Site Codes represented on the sherds in the Collection. Before conducting the work on site location, the initial sherd catalogue, which was entered into a Microsoft Excel spreadsheet, was transferred into Microsoft Access - a relational database programme - along with the table of information recorded from the Card Index and other tables listing boxes and bags. One of the important things that Access provides is the ability to link together categories of information through 'related fields'. This function can be used to generate information that would be extremely time

consuming to work out manually and almost impossible to accomplish without risk of error. Using the Access database, it was possible to combine the list of Site Codes taken from the Card Index and those represented on the sherds to produce a summary of all the Site Codes that had been used. The Access database was also used extensively in the next process involving the full classification of the sherd material.

From the combined list of all of the available Site Codes recorded from the Card Index and the sherds, excluding the sub-site divisions represented by the letter suffixes and the Marv-Dasht material, it has been established that there are 479 Site Codes represented on the sherds. Of these, 423 are also represented in the Card Index with the remaining 56 being represented only on the sherds. Together with the 124 Site Codes known only from the Card Index, there are a total of 603 known Site Codes (see Appendix III). This is considerably less than the figure of over 1,200 sites that Williamson claims to have identified (Williamson, 1971a: 1). Even taking into account the raised number that would be added by the inclusion of sub-sites, this would still not produce the number of sites that Williamson claims to have visited. It is probable that a significant portion of the unaccounted sites were not collected from in the first place, for example architectural features like bridges, mills, rock reliefs etc, which might not have produced any finds. In addition there may have been further sites where the quality of surface finds was too poor for retention, or where the periods represented fell outside the area of Williamson's interest, which in some areas appear to be fairly abundant[7]. Whether these explanations account for the majority of known sites with no sherds represented in the Ashmolean Collection, or whether there is still a significant number of unrepresented assemblages is a question that awaits a future study of the materials belonging to the Collection still in Iran.

In relation to site locations, if the original base maps become available, then it may be possible to identify the precise location of all of the Site Codes that were used. Alternatively, if it were possible to refer to the original map sheets that were used during the survey and the field notebooks, then it might be possible to establish the exact position of sites based on the triangulation figures that were noted. This task

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[7] This situation was personally observed during the 2004 Bushehr Hinterland Survey, particularly in the Borazjan region where there appears to be an abundance of Achaemenid and Hellenistic sites. Although this area was not covered by Williamson, it appears likely that a similar situation may have been encountered on the Bushehr peninsula itself (see Carter, Challis, Priestman and Tofighian, Forthcoming).

would clearly be more time consuming than working from the base maps. For now, the only available information has been the toponyms that are associated with some of the Site Codes on the Card Index. Where a toponym has been used, it can refer to a single site or to a group of sites with separate Site Codes that are located close to or within a named place, usually a town or village. The strategy in such cases has been to attempt to identify the position of a place name, and to take this as the general position for all of the associated Site Codes.

In most cases, it has been possible to identify accurately the place names used by Williamson using the main gazetteers available. Once a location was established, this was recorded as an eight-figure latitude/longitude coordinate within the sites table contained in the Collection Database. Using this method it has been possible to relocate 121 different toponyms from the main survey, representing 312 separate Site Codes; just over half of the total number of site codes used, or 65% of those represented by the sherds themselves (Fig. 2). These locations are, as has been explained above, only accurate to within a kilometre or so, and there are still a considerable number of site codes that have not yet been relocated, either because they have no associated toponym or because the toponym could not be identified. Despite this, the work has been successful in providing a location for 11,045 sherds in the collection. In addition, a further 620 sherds can be designated to a general survey Region. Combined then, there are 11,665 sherds (72%) that have been roughly relocated out of a total 16,090, that have some indication of their original provenance.

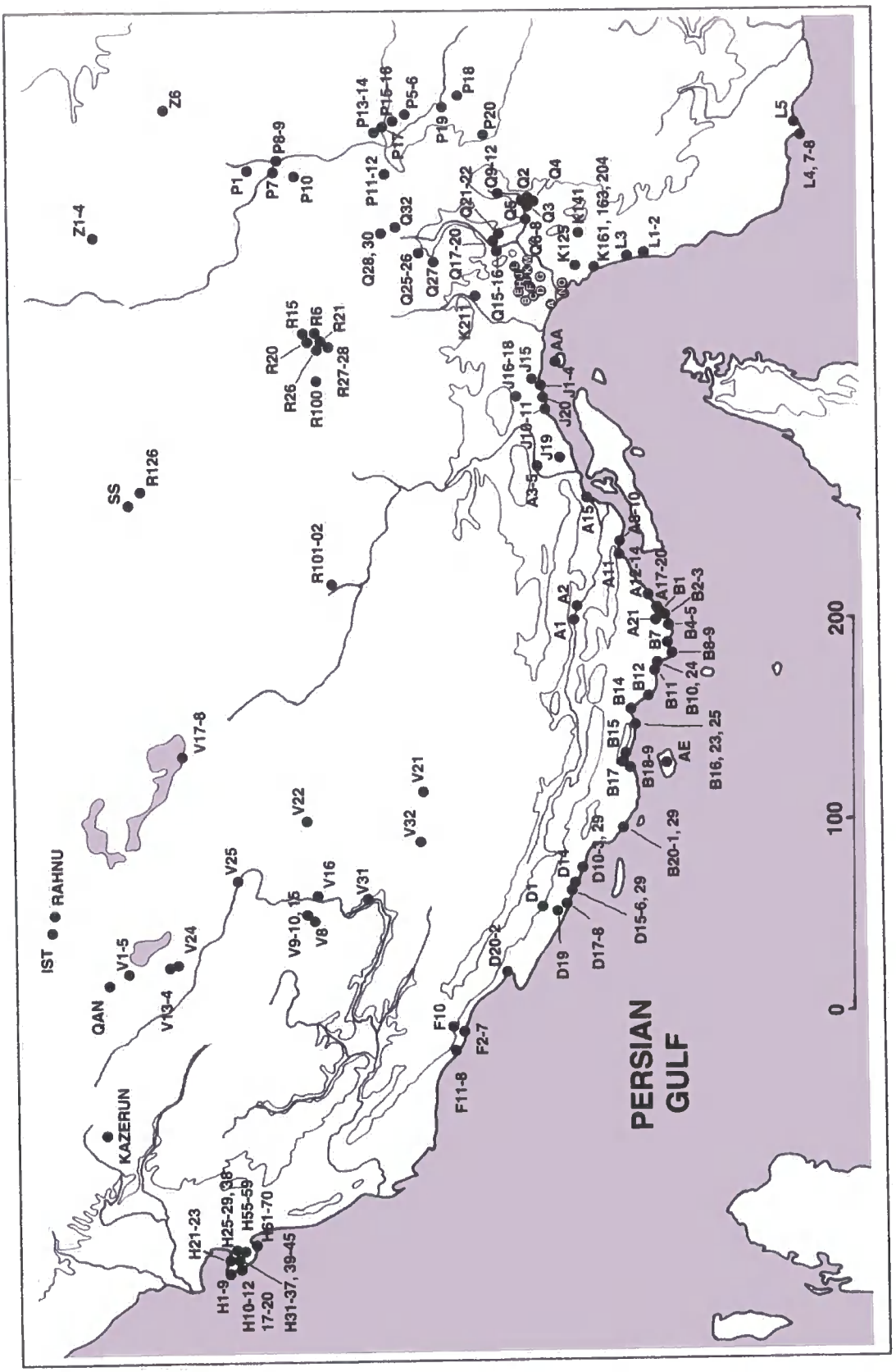

Fig. 2 *Map showing major rivers, ground above 500m (shaded in gray) and the location of individual Site Codes. The sites lettered A – M in the Minab area are: A = K7-8; B = K6, K70; C = K33; D = K9, K13; E = K19; F = K14-15, K66, K169; G = K143, K145; H = K20-25, K27-28, K62-63; I = K29-30; J = K40-43, K54, K67-69; K = K26; L = K1-2, K51; M = K162, 170; N = K103; O = K102, K130-31.*

While considerable progress has been made regarding the relocating of individual sites within the Williamson survey using the methods described above, perhaps the most useful contribution of this work has been the fact that it has provided a much clearer idea of the location and limits of each of the Regions within the survey (Fig. 3). While the continuing lack of a full site corpus means that there are still severe limitations to an analysis based on individual site distributions, it may be possible and most appropriate at this stage to conduct an analysis based on comparisons between these Regions.

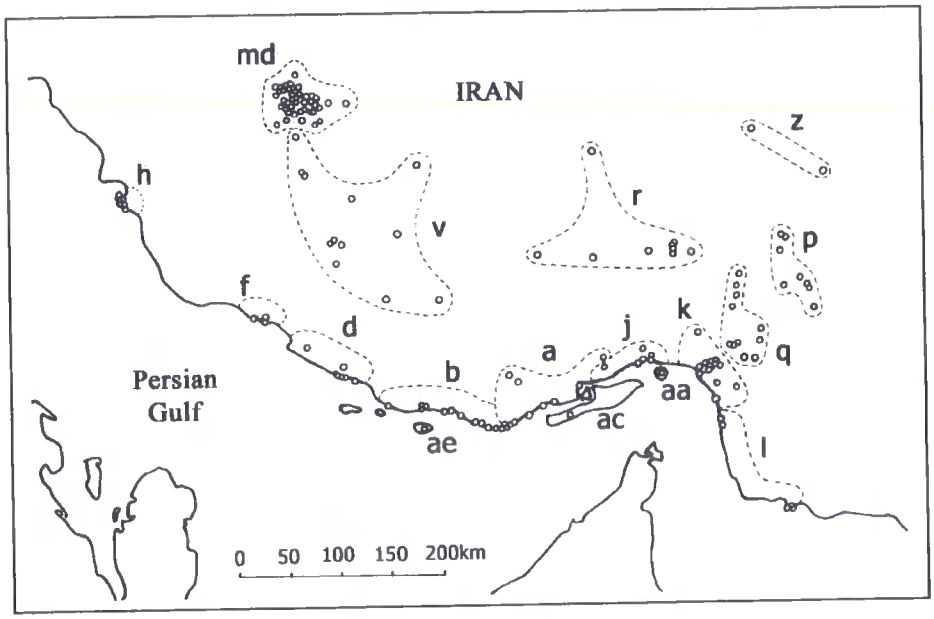

Fig. 3 *Williamson's survey Regions based on sites that have been relocated from the toponyms that appear on the Card Index of sites. Taken from Priestman, 2003: fig. 1.*

Ceramic Classification

Once all of the sherds had been sorted to a basic level and the information recorded into the sherd database, a second phase of sorting was initiated. Each of the major categories that had been established before were taken in turn, and an attempt was made to sort them into ceramic classes. In some cases this involved bringing together a large number of groups at once; for example the coarse-wares, which were sorted as a whole. In other cases the work involved further sub-division of related groups such as Sgraffiato, Slip-Painted Wares or Alkaline-Glazed Ware, and finally, in a few cases, there were groups that required little further treatment after the first level of sorting. Care was taken throughout to make sure that none of the material found its way into the wrong class and this often involved rechecking certain classes against one another as the work progressed. Once a class had been sorted to a satisfactory level, then it would be further

sub-divided according to the range of forms represented within the class. In most classification systems a separate type series would also be kept. This was avoided, as the initial aim was to define the range of forms occurring within each class. It was felt that this represented the correct way to approach the issue, as forms are often replicated across classes that belong to different production traditions. A secondary stage could involve looking at the interrelation of forms between classes, though this level of detail may not be warranted given the fact that the there is not way of gauging the relative importance of different types.

Each of the classes defined during the classification of the Collection is listed (Table 1) and described in the class catalogue below (Appendix I). A technical hierarchy of the classes has also been provided as an aid to the identification of particular class codes (Table 13). Here it is worth considering some of the issues surrounding the definition of a ceramic class. The concept of 'class' has been outlined by others as a basis for classification (Orton, Tyers & Vince 1993: 67-86). Essentially a 'class', as defined for the purposes of this study, is any group of objects that appear to have been produced in the same or a similar fashion based on the materials' visual appearance. It can include at one level the products of a single workshop and at another a group of workshops all producing similar material following a similar set of procedures, but spread out over a wide geographic area; the idea being that because of the similarity the group was most probably being produced during a single isolated period. As can be seen then, the concept of class is flexible and can change according to circumstance. This is necessary both because of the broad usage of the ceramic medium and the fact that the scale of ceramic production is subject to such extensively variation. At one level, there are pots produced by individuals forming vessels largely of their own design and being firing in a bonfire in close conjunction with the preparation of food and other domestic activities[8], and at the other extreme, there are highly organised workshops producing specialised, often standardised products on a mass scale. If one were too strict therefore in applying a rigid classificatory framework onto a set of material spanning a very wide area and time period, as the Williamson Collection does, then the classification would fail to represent historical reality.

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[8] This is at least a hypothesis that has been put forward based on an experimental study of late Neolithic Impressed Ware pottery from southwest Scotland (Priestman, 2002) and from the description of particular archaeological features where such pottery has been found (Cowie, 1996; McInnes, 1966).

Due the wide range of material in the Collection, the criteria used to define classes vary substantially for different parts of the assemblage. For example, for one group it may be possible to find meaningful coherence through a certain mode of firing, such as the general category of 'high-fired pottery', which identifies it as a product of East Asia. In another case, it may be more relevant to consider an aspect of function such as the form category 'storage jar' or 'cooking pot'. In both cases other elements might be disregarded if they appear to be secondary to the primary area of definition. One consideration that has been borne in mind throughout, is that significant differences in glaze or body composition, or mode of manufacture, hold greater weight in suggesting relatedness of production than do the superficial aspects such as rim type, glaze colour or decorative content. Saying that, there are no definitive rules and there are examples where differences in decorative technique or style do prove to be aspects that are significant in making certain important distinctions. One of the major difficulties of classifying pottery appears to be that of defining acceptable parameters of variation. All industries would have produced variable products, and allowance for this should be reflected in their classification. Within this and most other ceramic classification systems, the full implications of this fact have probably yet to be realised. Most workshops would not have limited their production to a single type or in some cases even a single technique of production. A good illustration of this point is provided in Collection where there are three sherds all on the same distinctive fabric, with exactly the same form; one with slip painted decoration, one with opaque white glaze and the third with a clear monochrome green glaze over a white slip. All were manufactured together at Sirjan, possibly in the same kilns.

Once a class was defined to a satisfactory standard and all of the forms were separated out, then the group was described. A standard form was used to enter the class descriptions in order to ensure that the same categories of information were recorded for every class. Because of the loose definition of the ceramic class (as described above), an explicit effort was made to state the criteria by which each class was defined. On the back of the form sheet, each of the types within a class were described, measured and sketched. Based on the second run through, the assemblage was divided from 49 broad groupings, into 274 classes. These include at one extreme broad and ill-defined classes, and at the other, classes that are very specific and should probably more correctly be

considered sub-classes. Examples of the latter include the 45 different divisions of CBW (Appendix I).

Once the classes had been defined, each was assigned a class code. The class codes have been devised based on an acronym of the full class name. The idea behind the class code is that it should generally be pronounceable, thereby acting a shortened abbreviation and mnemonic that can be quickly applied as a class label within the sherd database (Orton *et al*, 1993: 59). In cases where a number of sub-classes were defined within a broader group, the broader group was designated by an initial string of letters, followed by a full stop, followed by a number, letter or string of letters designating the sub-group. For example, with GRAF.H, 'GRAF' = Sgraffiato and 'H' = hatched, e.g. Hatched Sgraffiato. Similarly GRAF.EP = Early Polychrome Sgraffiato. As far as possible, the class codes used by Kennet in the Kush/al-Mataf classification have been followed (Kennet, 2004). Unfortunately, these codes were assigned on a piecemeal basis over a number of years of research. As a result, there are inconsistencies in the way that codes have been assigned. For example, all of the Frit classes follow the system outlined above; Sgraffiato codes on the other hand are prefixed by the sub-class division followed by the major group designation, e.g. HGRAF for Hatched Sgraffiato. After much deliberation, a decision was taken to change such class codes in order to rationalise the system. While this will inevitably cause some inconvenience, it is hoped that the measure will be of benefit in the long-term. In order to avoid ambiguity a statement outlining the relationship between the Kush/al-Mataf classification and that adopted here, together with a concordance to the class codes used by Kennet (2004), has been included within each of the class descriptions (Appendix I).

Fabric Description

A decision was taken to record characteristics relating to body type or fabric independently from the classes (Appendix II). The primary motive for this decision was the fact that the same body type can often run over a number of separate classes, or more often sub-classes. An example of the first scenario includes a particular distinctive coarse-ware fabric (Fabric 1) represented on a range of small jugs, jars and bowls, and on large heavily built storage jars. In this case, both products were probably built using the same clay source and may even have been manufactured in the same centres, however they clearly fulfilled such different functions that they have been recorded as

two separate classes (SMAG.A and LISV.A). An example of the latter scenario includes the true porcelain body that comes from Jingdezhen in China, which was used for many centuries across a whole range of CBW and WW (CBW.1-45). Because of the difference of dating of the CBW sub-classes they have been recorded separately, but all are on the same fabric (Fabric 75). With this example, the porcelain body is in fact so uniform that it has not been possible to distinguish the CBW body from that used on many of the earlier White Wares, even those from other provinces, and thus for present purposes they have all been recorded under the same fabric group. As a result of these overlaps between different classes or sub-classes, the practice of recording fabric as a separate series avoided the repetition of description that would have occurred if they had been recorded on a class specific basis.

Each fabric that was recognised was assigned a number and described on a standard record form. As with the classes, a record form was used to ensure that the same details were recorded for each fabric. Particular attention was given to macroscopic inclusions (e.g. c. >0.2mm), which were examined and described using a 10x hand lens. An approximate size range for the inclusions was given using a transparent ruler with 0.5mm markings. The degree of roundedness or angularity of inclusions was estimated from Powers' Scale of Roundedness (Orton *et al,* 1993: fig. A.5), the degree of particle sorting was estimated using the Scale of Pebble Sorting chart (Orton *et al,* 1993: fig. A.6) and the frequency of inclusions in the fabric matrix was estimated using the improved white on black Visual Percentage Estimates charts (Matthew, Woods & Oliver 1991: 216-63). The range of colours represented within a fabric group was estimated using a Munsell Soil Colour Chart (Munsell, 1994). Where a wide range of tones were represented within a single fabric group, both extremes of the spectrum - from oxidised to reduced - were recorded. Where the colour range was narrow, a typical example was selected and recorded. All features related to fabric colour and inclusions were recorded through the examination of a fresh section break.

The Refined Classification

Once all of the material had been classified and fully described, the revised details relating to the class, form and fabric had to be updated on the database of sherds. This process was complicated by the fact that each sherd already had a record on the database, and therefore 17,000 records needed to be re-accessed to add the additional

information. The difficulty with this was that if the new information was added to the wrong record, because the number was mis-typed, or had been mis-typed the first time, then the mistake would remerge at a later stage. When this occurred, it was necessary to find all of the erroneous sherds in question and try to resolve the problem. Rectifying errors proved to be one of the most time consuming aspects of the catalogue work, and every effort was made to minimise their occurrence. The main system that was used to filter out errors during this second phase of recording was to type the sherd number and site code for each piece into a separate table along with the new fields containing the updated aspects of the classification. These records were then compared against the original records to see if the site codes and sherd numbers corresponded, before adding the updated information into the original table. Using this system it was possible to cut out the majority of errors at the data inputting stage. Many of the errors that were not detected by this method appeared at a later stage once most of the material had been re-entered, and these needed to be dealt with manually by physically sorting back through the sherds to find the pieces in question. Inevitably, with a database of this size, some numbering errors could not be resolved and these have been documented as far as possible. The total number of un-resolvable errors is 61. In other words, 0.36% of the records have associated errors.

2.2 USING THE COLLECTION

Discoveries made through the work

One of the major 'discoveries' made during the course of the work on the Williamson Collection was that the Ashmolean Collection only represents a portion of the original survey assemblage. Much work has gone into trying to gain a clearer understanding of which elements of the Collection were removed from Iran and exported to the UK, and what criteria were used in the selection of this material. Clearly the credibility of any interpretations derived from the analysis of the Collection depend to a significant extent on a thorough understanding of the initial sampling policy and any subsequent changes to the overall composition of the Collection that have occurred since.

The fact that the Ashmolean Collection was not complete first became apparent during the work on site relocation. When comparing the number of Site Codes listed on the

Card Index of sites and those derived from the sherds, it immediately became apparent that there were many more sites listed on the Cards. In addition, there are a number of Regions situated along the coast which appear on a key to the Regions discovered in the Collection Archive that have no finds represented in the Collection. These are:

- Area C (Qalat to Neran)
- Area E (Naband to Tahiri)
- Area G (Rud-i-Mond to Bushehr)
- Area I (North of Bushehr)
- Area M (Jask eastwards)

In addition, there are a number of islands that are listed in the same source, which are not represented in the Collection, including:

- Area AB (Larak)
- Area AC (Qeshm)
- Area AD (Hangam)
- Area AF (Hinderabi)
- Area AG (Lavan)
- Area AH (Kharg)

It is not clear why these areas are not represented. One explanation is that the Region prefixes were designated before the work actually began and for some reason were never visited. Alternatively, the materials from these Regions were not shipped to the UK. For the time being neither of these possibilities can be discounted, although it is clear that Williamson was not granted permission to visit all of the areas on the coast (Williamson, 1971a: 1), so the former explanation does remain a possibility. A comparison of the number of sites within each of the survey areas represented on a combination of sherds and Cards and those represented on the sherds only is presented below (Table 5). The fact Regions 'I' and 'G' have no sites supports the suggestion that they were assigned before the survey began.

Area	Cards/Sherds	Sherds Only
A	20	16
B	27	23
C	8	0
D	38	26
E	5	0
F	19	15
G	0	0
H	91	73
I	0	0
J	17	17
K	202	186
L	9	9
M	0	0

Table 5 *Comparison of the number of sites per survey area represented by the sherds in the Ashmolean Collection and those known from the Index Cards and sherds combined.*

Since coming to this conclusion, more has been learned about which elements of the survey assemblage are missing. It seems that the original survey collection underwent the normal division policy for finds recovered by foreign archaeologists working in Iran at that time. In the spring of 1971, Williamson was able to spend about one month sorting through the survey collection gathered over the previous years (Williamson, 1971a: 2) and it may well have been at this time that the majority of the selection was made. Certainly when that selection was made it was not made arbitrarily. Deliberate decisions were taken about where to deposit different parts of the Collection and what Williamson regarded as the most significant elements were shipped to the UK (Prickett, 1975: 2). What is not clear is whether the selection was intended to form a representative sample of all the types of material that he encountered and collected in the field, or if it favoured certain types that he regarded as being particularly diagnostic. The latter appears to be more likely, especially in view of Williamson's survey methodology, which was aimed primarily at seeking evidence for site dating, and his ceramic methodology, which focussed on particular period type fossils rather than complete site assemblages.

More has also been learned about the portion of the Collection that Williamson left in Iran. Shortly after Williamson's death, Prickett made a review of the Iranian Collection while she was still considering publishing his work (Prickett, 1975). From this we learn that parts of the Collection were deposited at the National Museum in Tehran, the Narenjestan 'archaeological lab' at the Asia Institute in Shiraz, and the Siraf dig-house (Prickett, 1975). With each of these locations the importance of the material to

Williamson, declines in the order in which they are listed. Little has so far been learned about the latter two locations. Apparently there was a policy in the mid 1970s to reduce the collections at the Asia Institute, and the possibility of disposing of Williamson's material was considered, but it remains unclear whether this actually happened. The contents of the Siraf dig house, including a considerable collection of study material and some large stone objects were apparently given over to the Iranian Archaeological Services at the end of the excavations in 1973. Following this, "the Archaeological Service used the dig house as their headquarters for at least one season of excavation" (Whitehouse, pers. comm. 2003). In 2000, the contents of the dig house were inspected and found to be in a state of some confusion, therefore anything that was inspected by Martha Prickett in 1975 and which remained there is "probably [of] little or no archaeological value today" (Whitehouse, pers. comm. 2003). In June 2003, the Collection housed at the National Museum in Tehran was inspected on behalf of the Williamson Collection Project by Peter Morgan, and a full list was prepared of the labels written onto the 245 bags that the material has recently been transferred into from its original storage (P. Morgan, 2003a).

The fact that the material in Tehran still exists allays some of the worst fears, i.e. that the sherds might have decomposed back into the ground in some forgotten basement or been disposed of long ago[9]. On the contrary, the material was recently transferred into fresh bags as part of a general overhaul of the archaeological collections in Tehran Museum (Razmjou, pers. comm. 2003). The number of bags quoted above suggests that a sizable portion of the Collection may still be in Tehran. Without having inspected the material, it is difficult to say very much about it. What can be ascertained from the label information is that quantities of both the Marv-Dasht and Sirjan survey material were left in Iran; together amounting to 55 bags. What is interesting about the remaining 190 bags is that they contain a significant amount of kiln debris from various sites and that most of the sites do not appear to be represented on the current list of sites prepared from the Ashmolean Collection. A large number of sites do not however fall strictly within the remit of the survey and are from collections made at previously excavated sites such as Istakhr and Qaleh-i Dukhtar. This still leaves a lot of sites that do not appear to be represented either by the sherds in the Ashmolean collection or on the Site

[9] This was a view expressed by many people that I talked to in the course of working on the Collection.

Cards, although for the majority only a toponym is provided, and therefore they may relate to sites for which only a Site Code is currently available. Clearly, in the light of the work completed on the Ashmolean Collection, an inspection of the material in Tehran is now essential.

A potential indication of the number of sherds not represented in the Ashmolean Collection is provided by Williamson's claims that even by the beginning of 1969, he had recovered over 10,000 sherds of East Asian pottery from coastal sites alone (Williamson, 1970b: 206), whereas there are only 3,500 East Asian sherds in the Ashmolean Collection. In such a case, it is difficult to ascertain whether this discrepancy results from large amounts of the material being immediately discarded or if a lot of material has been separated out from the Collection and stored elsewhere. Another source that quotes a higher number of sherds is Morgan in his examination of Old Hormuz (P. Morgan, 1991: 70[10]). These figures are apparently derived from the list of finds recorded from the Card Index (Card Index records are short abbreviated class descriptions or sketches of forms, followed by a sherd count). Again, it is not clear whether these counts relate to sherds that were actually retained or material that was counted at the site and then immediately discarded. Perhaps the former suggestion is more likely as the figures are always relatively low for each ware, rarely exceeding ten or twenty pieces. If the counts were based on the total number of sherds noted, then one might expect them to reach into the hundreds or even thousands.

One way, therefore, to estimate how many finds may be missing from the survey assemblage that Williamson retained is to compare the number of finds listed on the Card Index and those contained within the Collection. As the primary objective of the current research has been to deal comprehensively with the sherd material, it has only been possible to prepare a sample of the finds listed on the Card Index. Three regions were selected: Regions A, B and D. Each of the Regions was chosen because it contained a sufficient number of sites, it had material spanning the full duration of the Sasanian and Islamic periods and because there was nothing to suggest obvious biases in the data. The total number of sherds counted from the Card Index for each Region, compared against the number contained within the Collection, is presented below

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[10] P. Morgan refers to 2,152 sherds collected by Williamson from K103, while in the Collection there are only 675.

(Table 6). It is clear from this data that there are many more finds listed on the Card Index, as expected, however, the discrepancy varies considerably between different Regions, with the Ashmolean Collection making up somewhere between 10% - 32% of the number of sherds listed on the Card Index for any given Region. From these figures one can estimate that the complete Collection could stand at anywhere between c.53,000 and c.170,000 sherds or 113,000 sherds if an average is taken of the three Regions that have been sampled. These figures may well change with the addition of other Regions, in particular the areas most intensively surveyed, Regions H and K. Clearly if a quantity of sherds approaching these figures remain in storage somewhere, then the work on the Williamson Collection is a far larger task than had ever previously been anticipated. Obviously it will be extremely important to work on this aspect further, not only to determine what percentage of the original collection is represented by the Ashmolean component, but also to determine what the criteria used in its selection were.

	Region	Sherds	Cards	%
	A	521	1652	32
	B	631	6467	10
	D	429	2680	16
Totals		1581	10799	15

Table 6 *Comparison of the number of sherds in the Williamson Collection and the number of finds listed on the Card Index for three sample Regions. The right hand column also provides the percentage of sherds in the Collection as a proportion of the total number of finds listed on the cards.*

Another approach that has been pursued in order to gain a clearer understanding of what elements of the Collection are and are not represented in the component of the finds removed from Iran, has been to look at particular classes recorded on the Card Index. Each of the classes that Williamson recorded are represented by an abbreviation, short description or drawing. In some cases these are standardised and intelligible, though in most cases it is difficult to interpret what category of material is being referring to. For the current purposes, a selection was made of the more easily recognisable abbreviations. Classes were also selected for which there is likely to be some consensus regarding their definition and which are also represented in the current classification. Counts were made of the selected classes by site within the three sample Regions: A, B and D (Table 7).

CLASS	REGION A		REGION B		REGION D	
	Cards	Collection	Cards	Collection	Cards	Collection
ALK.2	2	2	24	14	6	2
CBW	3	284	9	103	0	0
DUSUN	0	0	7	6	2	1
FRIT.BW	22	209	17	20	4	0
GRAF	6	12	12	16	5	1
GRAF.EP	0	0	3	4	0	0
GRAF.G	0	0	12	2	4	0
GRAF.H	0	0	6	26	1	5
GRAF.Y	0	0	3	3	1	0
HONEY	0	0	0	0	2	2
KHUNJ	24	16	27	3	2	0
LQC	15	224	13	31	0	0
MTB	8	14	6	0	0	0
TIN.ML/PL	0	0	4	1	0	0
TIN.W1/2	0	0	6	14	0	0
UGP	1	48	19	13	13	1
TOTAL	81	809	168	256	40	12
RATIO	1: 10		1: 1.5		1: 0.3	

Table 7 *Counts of the total number of sherds listed on the Card Index and those represented in the Ashmolean Collection for a selection of classes from three different Regions. The bottom row provides the ratio of sherds on the cards to sherds in the Collection (rounded to one decimal point).*

From the data, it is clear that there is extensive variation in how well different classes are represented as a whole, and how well different classes are represented within each Region. Surprisingly, there are considerably more finds belonging to the selected classes represented in Region A in the Collection than there are listed on the Card Index, suggesting that even the card inventory is not complete. In Region B the ratio of classes listed on the cards and in the Collection are roughly equal, and in Region D the sample wares have many more sherds listed on the cards than in the Collection, suggesting that the data from Region D is particularly poorly represented in the Collection.

A further perspective is provided by comparing in isolation the total number of sherds from the Card Index and the Collection for the four classes list above that are represented in all three Regions: ALK.2, FRIT.BW, GRAF (general) and KHUNJ (Table 8).

CLASS	REGION A		REGION B		REGION D	
	Cards	Collection	Cards	Collection	Cards	Collection
ALK.2	2	2	24	14	6	2
FRIT.BW	22	209	17	20	4	0
GRAF	6	12	12	16	5	1
KHUNJ	24	16	27	3	2	0

Table 8 *Isolated figures comparing the number of sherds listed on the Card Index and those in the Ashmolean Collection for the four classes within the sample selection of wares (listed above) that are represented in each of the three sample Regions.*

Again, there appears to be considerable regional variability, not only in terms of how fully each region is represented in Ashmolean Collection in general, but also in terms of how well specific wares are represented within each Region. Here one can see that KHUNJ and ALK.2 appear to be under-represented across all of the Regions sampled, whereas FRIT.BW and GRAF produced considerably more finds within the Collection than are listed on the Cards, except in Region D. This points again to the fact that the Card inventory cannot be complete, or alternatively that Williamson only recorded those sherds that were discarded on the Cards.

Such discrepancies in the sherd count data may not however have been reflected in the dating and characterisation of sites. It is conceivable for example that if a very large number of sherds belonging to a particular class were recovered, then only a small sample would have been retained, with the rest being recorded on the Cards and either discarded or left in dead storage. In such a case, even if there were only one or two sherds of a particular class retained in the Ashmolean Collection, then these would still provide a positive identification for the character or period of occupation of a particular site.

A comparison is made below (Table 9) showing the number of sites on which a selection of classes occur, based on the information recorded from the Card Index or from the Ashmolean Collection for the same three sample Regions that have been used above.

CLASS	REGION A		REGION B		REGION D	
	Cards	Collection	Cards	Collection	Cards	Collection
FRIT.BW	11	10	10	7	3	0
KHUNJ	8	2	13	3	2	0
GRAF	2	2	15	5	7	1
LQC	4	3	6	5	0	1
CBW	3	9	4	0	0	0
DUSUN	0	0	5	3	2	1
MTB	4	0	5	0	0	0
TOTAL	32	26	58	23	14	3
RATIO	1: 0.8		1: 0.4		1: 0.2	

Table 9 *Comparison showing how many sites particular classes occur on within three different Regions, based either on information derived from the Card Index, or from the sherds in the Ashmolean Collection.*

The overall trend is that the classes in the Ashmolean Collection are derived from a smaller number of sites than those recorded for the same classes on the Card Index, although in the case of CBW from Region A this trend is uniquely reversed. Aside from the general trend, there is extensive variation in the magnitude of discrepancy between the site count derived from the two different sources. For some classes, such as LQC or FRIT.BW, the difference between the number of sites recorded from the sherds or from the Card Index is mostly only marginally different. In contrast to this other classes such as KHUNJ or MTB are clearly recorded on a significantly greater number of sites on the Card Index than would be suggested from their occurrence within the Collection. This suggests that the reliability of an analysis of class distribution based purely on the data contained in the Collection is going to vary depending on the specific class under consideration. In addition, as with the sherd counts, there appears to be little consistency between Regions, suggesting that there are also particular areas of the survey that are more reliably represented.

The analysis above suggests that there are substantial problems and inconsistencies with the data set provided by the Ashmolean Collection. Three potential avenues suggest themselves as means of improving the accuracy of the available information: to look at the rest of the material in Iran, if it is still accessible; to decode the complete inventory of pottery on the Card Index; or to revisit the sites that Williamson Collected from in order to collect new samples. All of these approaches are likely to yield results, but none are ideal. Work on the collection in Iran may well be possible though it is not yet clear whether all of the material that Williamson collected is still available for inspection. An analysis of the finds listed on the Card Index would certainly be hindered by the difficulty of deciphering Williamson's classification system and checking the

accuracy of his designations. In addition, the analysis that has been presented above has demonstrated that even the Card Index is unlikely to provide a complete inventory of the materials collected unless the Card Index itself represents a list of the materials that were not retained in the Collection, in which case a list of the finds on the Card Index may prove to be very useful. Finally revisiting all of the sites that Williamson collected from would be extremely costly and in many cases may not now be possible, for even if they could be accurately relocated many of the sites have probably now been destroyed.

What we are left with for now is the question of how best to use the considerable collection of material that Williamson succeeded in shipping back to the UK. Clearly any attempt to make use of the data in order to plot the absolute limits of individual class distributions or to undertake analysis involving quantification would be unwarranted at this stage when one takes into consideration the original collection strategy, the later division of the Collection and the inconsistencies in the data highlighted above. From what has been learned, it seems that the strongest aspects of the data remains the information on site dating and the regional distribution of classes, but instead of attempting to consider proof of absence, which the data cannot support, it should be possible to work just with the positive evidence. For example, if one can show from the data that a particular class is represented from sites covering a particular section of the coast, then it is irrefutable that this is a true reflection of the situation. What one cannot say is that the particular class in question does not occur in other areas. In the future it will certainly be an objective to move towards tracing the total distribution of certain types of pottery. However, merely being able to plot where certain classes occur is of considerable significance given the virtual absence of comparable data for the region.

Dating of Pottery and Sites

Having set out as far possible the methodology and theory behind the Williamson survey and how the Ashmolean Collection has been dealt with, it should now be possible for the first time to proceed with the analysis of the Collection while taking into account various caveats regarding the credibility of the data. Two main areas will be considered in the following section: firstly changes in settlement distribution based on the dating provided by the study of the sherd collection, and secondly the distribution of particular classes. Both types of analysis are underpinned by the dating of the

ceramic classes. Using the classification of the pottery linked to the sherd catalogue it is now possible to gain an idea of the nature of the materials present at each of the sites and the periods when they were occupied. Obviously, the potential to date sites based on surface finds is subject to a number of limitations. There is no way of knowing for example whether a representative range of material is preserved in the surface deposits or whether the finds were derived from the same type formation activity, e.g. settlement accumulation, secondary dumping, manuring etc (Millett, 2000: 218-19). Similarly one cannot assume that sites, especially larger ones, were uniformly occupied (Wilkinson, 1999: 46), and therefore the site dating relies to a significant extent on how the site was sub-divided and from where the sherd sample was collected. Most serious of all however, is the fact that the main period of occupation may not be represented in the surface deposits, either because earlier levels are masked, or the most recent deposits have been stripped away through natural erosional/aggradation cycles (Wilkinson, 2003: 80-81, fig. 5.5) or cultural processes (Millett, 2000: 221).

Returning for the moment to the question of the dating of the ceramic classes, unlike some categories of archaeological material, the potential for absolute dating of ceramics is limited. Aside from a few scientific techniques such as thermoluminescence, which can only yield very broad date ranges, ceramic studies are generally restricted to a typological approach. What this involves is a classification of finds based on material that appears to have been produced in the same place at the same time, on the basis of uniformity of material, design and production technique. The basis of the classification that has been used here has been described above, and is based as far as possible on defining groups associated through related production. Having defined such a group, one can then begin the process of establishing parallels between that group and other comparable finds recovered from datable contexts, generally from excavation. This is one of the primary techniques of archaeology, and although certain techniques relating to its application have been advanced over the years, the principle has remained relatively unchanged since it was first applied within the archaeological discipline.

The specific field of ceramic dating relating to this study is an area that remains poorly understood, especially compared with the extremely detailed understanding that archaeologists have of the ceramic chronology for many other areas and periods, most notably parts of the Roman Empire. When Williamson first began his work in Iran,

there was almost no information on many of the classes that he encountered, and as a result, he was forced to rely largely on his own classification and to develop his own chronological parallels. In fact, until recently, and to a large extent even now, very little progress had been made in satisfactorily defining many of the classes within the region, particularly coarse wares and those styles relating to the pre-Samarra horizon period and, somewhat surprisingly, the late and post medieval periods as well (Priestman, Kennet & Petrie, In Press). Although there was a small selection of excavated sites (notably Samarra, Fustat, Siraf, Nishapur and Rayy) and well known ceramic classes (primarily those defined by museum acquisitions through the art market *cf.* Lane, 1947; 1957) that Williamson was able to refer to, the only quantified assemblage from anywhere in the Indian Ocean, until recently, came from East Africa (Horton, 1996). Undoubtedly the excavations at Siraf would have been capable of providing a similar high standard of information, yet the failure to bring that research together into a conclusive publication and the focus on large area architectural exposure, means that the ceramic chronology from Siraf has inevitably remained generalised and obscure.

One of the major breakthroughs that can be taken advantage of now, comes from the detailed ceramic sequence excavated from Kush and al-Mataf in Ras al-Khaimah, situated within the Persian Gulf itself (Kennet, 1997; 2003; 2004). Combined these sites produced an assemblage of 76,663 phased sherds, that run in a continuous sequence all the way from the $4^{th}/5^{th}$ through to the $16^{th}/17^{th}$ centuries (Kennet, 2004: 13, table 1). In addition to refining the dating for a number of previously well-known wares, the Kush/al-Mataf sequence is significant in the fact that it has provided criteria for determining distinctions between periods that have until now been extremely problematic, such as the Sasanian/Islamic period divide, as well as dating for some of the coarse ware groups and wares that had never before been recognised (Kennet, 2004).

Relating the Williamson Collection material to this sequence has been aided by the fact that Williamson himself appears to have made a significant start to addressing or attempting to address many of the same 'ceramic problems' as Kennet revisited over thirty years later. This must, in part, be due to the fact that these 'problems' are basic archaeological realities, and had Williamson completed his work, the task that Kennet undertook with the definition of material from his own excavations would have been

greatly simplified. Examples of the type of parallels that exist between these two authors' work include the identification of what Kennet has called CLINKY, SMAG, LISV and JULFAR, as significant coarse-ware period indicators; all of which are well represented in the Williamson Collection and a number of which Williamson himself went some way towards publishing (Williamson, 1972d: 'Type 5', 101, fig. 5[11]).

In many cases, it would have been possible to directly transplant the classification developed in Ras al-Khaimah onto the Williamson assemblage. In some cases this has occurred, however it was also felt that it was important not to be blinded to any aspects of departure between a classification that was developed for the narrowly defined region of Ras al-Khaimah and one that was intended for an extensive survey covering a large part of southern Iran. As a result, the classification was to a significant extent, undertaken afresh with the material sub-divided according to the characteristics particular to the Williamson Collection itself. The fact that one can now draw very close parallels between most of the ceramic classes defined from the Williamson Collection and those arrived at from Kennet's study of the pottery in Ras al-Khaimah, is a testimony of the uniformity of ceramic material across the region as a whole.

Having established a direct typological link in most cases between groups represented within the Williamson Collection and those defined during the work in Ras al-Khaimah, one can use the excavated assemblages to provide an approximate dating for each of the shared classes. No attempt has been made at this stage to critically examine the reliability of the Kush/al-Mataf sequence or its associated dating. A detailed justification of these aspects has been provided in the publication of that work (Kennet, 2004) and any subsequent revisions that others may feel are necessary will apply equally to the results presented here. The most fundamental aspect of the Kush/al-Mataf dating is the seriation of the sequence and its distribution across the established phases encountered through the excavation. These have been grouped together into related periods, which have been dated using a combination of methods including radiocarbon dates, numismatic evidence and cross-dated typological parallels. Although the precise dating of each period may still be open to question, the seriation of the ceramics across the excavated phases provides concrete evidence for the chronological succession of

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[11] Williamson's 'Type 5' can almost certainly be equated with SMAG.A and/or SMAG.B.

wares, and allows one to pin-point what might be termed 'ceramic periods', i.e. points of stability in a range of ceramic classes over a particular period of time (Kennet, 2004: 114).

An archaeological approach based on ceramic periods is therefore one that takes as its starting point the relative chronology that is provided by material change itself. This is not only important because the data must be allowed to 'speak for itself', but because it is this very approach which allows us to gain an insight into the interaction between historical events and primary aspects of cultural change as demonstrated by the development of the material culture itself. Taking this as the basic premise behind the ceramic periodisation in the Williamson Collection, it is possible to put forward a general phasing of the ceramic classes represented in the Collection that essentially stands on its own. At the same time, for convenience, it is useful to attempt to peg dates onto this sequence in order to locate it within time, even if only at a general level, bearing in mind that they are secondary and are open to revision without fundamentally affecting the sequence itself.

One of the first complications that one is faced with in trying to fit all of the different ceramic classes into a single chronological sequence, is the fact that there is a lack of uniformity in the currency of different ceramic classes. Certain classes may be short-lived while others may continue for many centuries. In the case of the latter, one can invariably rely on the fact that some changes will eventually occur in an industry, due to factors such as a change in demand or material supply. Where it is less easy to generalise is in the nature of the changes witnessed. In some cases the transformation may be rapid and/or punctuated, in others it may be slow and progressive. Added to this is the fact that the ceramic classes do not represent a uniform category: in some cases classes are defined in terms of a single production, in others a whole group of loosely related industries may all be included under a single heading. As a result, there is likely to be further variability in the precision of the dating associated with different types of class grouping. It is clear from this that the only dates that truly apply are those that one might be able to fix to the individual class. The precision and range of these dates is likely to vary substantially according to the category of material one is dealing with. Any attempt therefore to include all of the material within a single unified periodisation is always going to involve some compromise, and to a certain extent a best-fit solution.

The choice remains as to whether to include as much of the sample as possible and use very broad periods, or to omit material but keep the periods more closely defined.

For the purposes of dating sites in order to analyse site distribution changes using the whole assemblage, as opposed to examining the distribution of individual wares, it has been necessary to use period lengths that are short enough to ensure that the analysis can be conducted with something approaching a meaningful level of precision. At the same time the period divisions have to take into account those points where one can identify substantial change across a set of different ceramic industries. As a result, the most precise level of dating that might be available for some of the classes has had to be overlooked, in particular for many of those from East Asia. At the same time, classes with extremely broadly defined time ranges have had to be squeezed into the period in which they are most likely to have occurred. The inevitable result is that there will be some loss of accuracy.

Below, an attempt has been made to sub-divide the periods represented by the finds in the Williamson Collection down into seven sub-periods, six of which cover the Sasanian and Islamic era (Table 10). Each of the period distinctions is based on significant diachronic changes in the ceramic assemblage that were revealed through the seriation of the Kush/al-Mataf excavations. Inevitably, there will be some overlap between these periods, due to the problem that many of the ceramic industries have their own independent chronological ranges that overlap in different ways. Added to this is the fact that the dating of many of these groups is not precise enough to determine exactly when they went into and out of circulation. In fact, this question is probably one of considerable complexity and is likely to have varied between different areas of the survey itself. There is nothing to guarantee, for example, that if an industry died out in one place, then it did not remain in circulation in another; a fact that partly undermines the concept of cross-dating itself. Taking these problems into consideration, the periodisation offered below does not follow on in a precise succession, and some overlap in date range has been left between most periods. The main wares that are associated with each period are listed in the right hand column (Table 10). Some elaboration is needed on this point.

Period	Date Range	Main Period Markers (Class Codes in Catalogue)
1	<3rdC AD	SLIP (early), Particular Coarse Wares
2	3rd - 6thC	FOPW, CLINKY, IRAB, ALK.2, TORP, SLIP.B, SLIP.TB
3	6th - 9thC	SMAG, LISV, ALK.3, IRPW, SBBW, HONEY, DUSUN
4	9th - 11thC	TIN, SPLASH, GRAF (early), WW, MEW.C
5	11th - 13thC	GRAF (late), MEW, SPW, PAW, MGP.1, WW, QING, DEH.1, LQC.1
6	14th - 17thC	CBW, LQC.2-4, WW, STO, MTB, FRIT, JUL, PERSIA, KHUNJ
7	17th - 20thC	UGP, CBW, JUL.RC, REDYEL, SPLASH.L, YSPEC

Table 10 *Ceramic periodisation based on significant changes in the ceramic assemblage as revealed through the Kush/al-Mataf seriation, with approximate dates provided by the same excavations.*

Period 1 includes all of the pre-Sasanian wares, some of which reach back as far as the Chalcolithic period. Williamson made little attempt to collect these wares, and those that are present in the collection have probably been included accidentally or due to the way that the collection was divided towards the end of the work[12]. As a result, this cannot be regarded in any way as a representative sample, and therefore no attempt has been made to further sub-divide the material into its associated periods.

The distinction made here between Periods 2 and 3 (the Sasanian period and the late Sasanian/Early Islamic period), is based largely on the distinctions that were made between Period I and II in the assemblage at Kush (summarised in Kennet, 2004: tables 32 & 33). Most of these distinctions are quantitative rather than qualitative, thus assigning the relevant classes to one or other of the periods is not altogether reliable. At the same time, the figures that are presented from Kush appear striking enough to warrant the division.

Period 4 here is represented by the 'Samarra horizon', which is probably one of the most significant and well-defined events (both technically and chronologically) in the development of ceramic technology that took place during the whole period under consideration. Where there is potentially some confusion is in the fact that the Late Alkaline-Glazed Ware (ALK.3) may well have continued on into this period, although it is mostly associated with the Pre-Abbasid, Early Islamic period and has therefore been

[12] Most of the prehistoric sherds where handed over to Martha Prickett for study, yet there is a possibility that the large box of Chalcolithic/Bronze Age painted sherds mostly from R101, were picked up during the period right at the end of the survey between September 24th and November 9th 1971, when Prickett had returned to America and Williamson continued with the survey alone (Table 2).

included in Period 3. The confusion caused by this should however be minimal as the quantity of ALK.3 is low and the problem can be resolved in any case (see below).

The distinction that has been made between Periods 4 and 5 is based primarily on the distinction between early and late Sgraffiato (GRAF) that have long been recognised, but which were further clarified by the Kush sequence. Other groups that fall into Period 5 are Moulded Ewers (MEW), most of the Slip-Painted Ware (SPW), although some of this may be earlier too, and some of the Far Eastern groups such as Early Longquan Celadon (LQC.1) and particular White Wares (WW).

Period 6 could clearly be further sub-divided. One of the major wares represented in this period, Chinese Blue and White (CBW), does not come into circulation in a major way until the 15th century, which is also true of the South-East Asian Stoneware (STO.BUR, STO.THAI, STO.GRY). The main reason for pushing the beginning date for this period back to the 14th century is that this marks the introduction point for a whole raft of locally produced classes: for example, the Later Frit, including Underglaze Painted Frit (FRIT.BW, FRIT.TB), Khunj Ware (KHUNJ), Persian Blue Speckled Ware (PERSIA) and developed Julfar Ware (JUL). In addition, the bulk of the Longquan Celadon (LQC.2-4) represented in the Collection also belongs to the 14th - 15th century period. If it were possible to date some of these locally produced wares more closely, then a case could be made for sub-dividing this period into a 14th - 15th century phase and a 16th - 17th century phase.

Period 7, the most recent period is, surprisingly, one of the least well understood in terms of local ceramic styles, and is mostly represented by classes that were absent from the al-Mataf sequence and which have modern characteristics. Also included are a group of East Asian classes that are securely dated to this period.

There are clearly some problems with this periodisation and these have been highlighted above. At the same time this framework does appear to provide the best compromise between the demands and the constraints imposed by the aims of the analysis presented below and what is understood about the material itself. Using this periodisation as a starting point, one can at least begin to explore the possibilities for analysing various

aspects of the data, in particular the distribution of sites by period across the area covered by the Williamson survey.

CHAPTER 3. REGIONAL SETTLEMENT PATTERNS

3.1 REGIONAL SURVEYS

Settlement Change

A significant aspect of the recent work undertaken on the Williamson Collection has been directed towards establishing what areas Williamson's survey covered, how many sites he collected from and where his sites are located. The methods used to carry out this research have been described in detail in Chapter 2. As a result of this research, there is now an established corpus of over 800 sites, more than 550 of which have assemblages represented in the Ashmolean component of the Williamson Collection. About one third of these sites have reasonably precise locations, with most of the rest at least attributable to one of the survey Regions. Despite the limitations that the uncertainty over precise locations for many of the sites imposes, it is clear that the site corpus is unique and significant, and that its size alone means that the data could not easily be replicated without the investment of substantial time and cost, even if it were still logistically and physically possible. Perhaps even more importantly, the site sample provided by the Williamson Collection is large and extensive enough to provide a unique opportunity to identify significant regional-scale trends, if they exist, in broad temporal and spatial changes in site distribution.

One of the major strengths of archaeology, and survey in particular, is the ability to map out changes that take place over temporal/spatial scales that are imperceptible to the individual. Adams' work in particular provides a canonical model of how multi-period focussed survey can be used to provide a powerful sketch of large-scale changes in land-use regime, settlement orientation and population density over many millennia (e.g. Adams, 1965). A survey undertaken more recently in Ras al-Khaimah has highlighted the fact that significant economic changes, as revealed through settlement patterns in the area, are not only restricted to very long-term time-scales, but can also be effectively explored through archaeological data within the last few hundred years (Kennet, 2002). In dealing with such recent developments, the question is brought sharply into focus of how archaeological trends interplay with the events of history. Historical accounts, by their nature, offer a perspective too heavily imbedded in the time of their creation to be capable of fully comprehending the longer-term processes of transformation and change that can be discerned most readily in the data from

archaeological survey (Sbonias, 1999: 11-16). Yet, as has been shown, historical information when treated as a whole can be successfully woven together into meaningful accounts of processes occurring over a broad temporal/spatial scales (e.g. Chaudhuri, 1984).

So far, little attempt has been made to create a solid union between the available long-term historical narrative of the Persian Gulf and the parallel processes of what can be termed *la longue durée* as revealed in the archaeology of the region. While such an objective remains a desirable goal, at present, we are probably not yet in a position to provide a realistic account of the underlying archaeological trends on a Persian Gulf-wide scale. Sub-regional trends can already be discerned, and some at least have been noted in synthetic accounts, such as those provided by Potts, dealing with general events primarily restricted to the southern shore of the Persian Gulf (Potts, 1990), Rougeulle in her account of East Asian maritime trade development in the region (Rougeulle, 1996), or Kennet in his model of economic growth in the lower Persian Gulf region during the period of Hormuzi prosperity (Kennet, 2002). More recently, the concept of a regional scale framework for the Persian Gulf has received fresh impetus through the concept of 'signature landscapes' within the Near East (Wilkinson, 2003). Never the less an integrated view of the Persian Gulf is still dependent on more comprehensive research in the region. One of the essential elements that has remained lacking until now has been basic archaeological information on almost the entire northern shore of the Persian Gulf, the important exception being the partially published information available from Siraf. One of the promises that the Williamson Collection offers is potentially the most detailed sketch yet available for the entire stretch of this 'missing section'. One of the aims of the discussion here therefore, is to explore the archaeological evidence for settlement trends using the Williamson Collection data. Before this can be undertaken, it is desirable to present a summary of what is already known about regional settlement patterns within the northern Persian Gulf based on other surveys that have been carried out within the area, in order to set out the framework within which the Williamson Collection analysis can be understood.

In comparing the results of different independent survey projects, there are a number of methodological and theoretical points to take into consideration. One of the main aspects to consider is the issue of site dating and inter-comparison of data between

different surveys. Although there are cases where several researchers have adopted a common set of chronological divisions (for example Adams' four-phase periodisation of the Sasanian and Islamic period, outlined below, which has been widely adopted by other researchers), the over-all focus of different projects means that the length of period sub-divisions used often varies. Taking for example the types of survey that have attempted to deal with the complete spectra of evidence from the first sedentary settlement through to the modern period (examples are presented below), it is often the case that the length of periods will be fairly broad. This is clearly acceptable when the aim is to take a very long-term perspective, but it can also lead to gross over-generalisations when one is considering a more narrowly defined period, for example the events dealt with here that cover the past one thousand seven hundred years or so (see for example Prickett, 1976; 1979, discussed below).

In addition to the fact that one is often dealing with different types of period calibration between separate survey projects, the criteria actually used to establish site dating is also likely to vary according to the location of the survey, the availability of datable comparanda and the methods of particular researchers. As a result, even in situations where separate surveys may share the same period divisions, the criteria used to distinguish between those periods is unlikely to remain consistent. Because of this two-fold problem in site dating and comparability of survey data, it seems unwise to attempt to establish any form of common period calibration between separate projects, unless one can carefully scrutinise the primary dating criteria itself, but even then, the only way to be completely secure would be to examine the original finds, unless they are recorded and presented in a sufficiently detailed manner. In the mean time, and in order to at least to gain a preliminary overview of the potential differences in regional settlement trends revealed through the archaeological surveys that have been carried out in the region, it will be informative to attempt to tabulate these results, bearing in mind that the methods and merits of individual projects are unlikely to be the same.

Following on from the problems inherent in the approach of inter-survey comparison, it is also worth considering exactly what it is that one is attempting to establish from the results of such an analysis. Obviously, if one were in any way to attempt to gain a complete understanding of settlement change, then it would be necessary to consider many different but interrelated factors. These might include aspects relating to the

geographic and environmental setting of settlement and variables such as settlement size, distribution and range of site types within particular periods. While these can all be seen as primary aspects of a full settlement study, the situation in relation to the Williamson survey is that the only information currently available is site locations and information on the ceramic assemblages from individual sites. What one is confined to therefore, is a straightforward exploration of the number of sites by period within generalised geographic areas. Such a simplified exploration has significant limitations. In particular, it is necessary to remain cautious about the temptation to equate changes in site numbers with changes in population or settlement density. Clearly, a very real potential exists for the number of sites encountered through survey to change due to factors such as the level of settlement aggregation or dispersal, or shifts in the ratio of small to large settlements during different periods (Sbonias, 1999: 7; Wilkinson, 1999: 48-49, fig. 4.2). While these factors mean that it is not possible to infer population growth through increases in the number of sites, significant growth or decline in site numbers are often a factor indicative of significant change within an area, and are a means of comparison of regions, whatever their cause.

Shah Maran-Daulatabad Survey

The Shah Maran-Daulatabad basin is situated in inland Kerman. A survey was carried out over an eleven-month period between 1973-75, during which an area of 600km^2 was covered. The survey provided a record of 178 sites, mostly within the basin, with a few sites belonging to the adjacent valley systems (Prickett, 1976; 1979; 1986a; 1986b). The sites range in date from the late 6th millennium BC (some of the earliest evidence of sedentary agriculture in southern Iran), through to the Early to Middle Islamic period. A plot of the number of sites by period has been prepared from a preliminary list of sites broken down by period (Prickett, 1976: 176). The figures that these provide vary somewhat from those provided by a later source (Prickett, 1979: 52-54), but the latter offer a less precise chronological breakdown, so the discrepancy has generally been overlooked. A single Yahya VII site has been included from the later source, which is not listed in the first (Fig. 4).

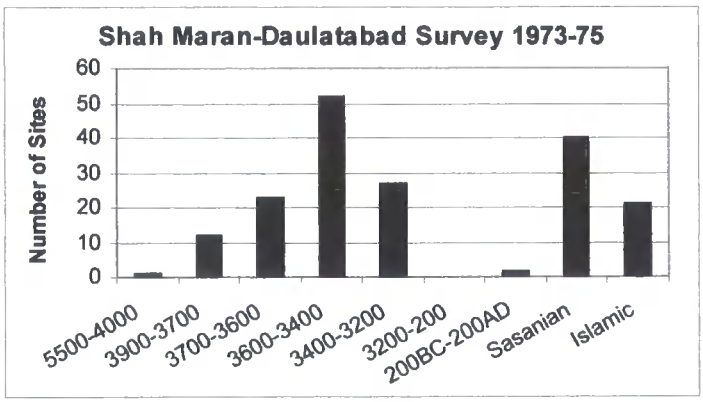

Fig. 4 *Number of sites by period in the Shah Maran-Daulatabad basin based on Prickett, 1976: 176 and Prickett, 1979: 52. Dates derived from the following periods: pre-Yahya Moradabad phase, Yahya VI, Yahya VB, Yahya VA, Iblis IV-V, Yahya IVC down to next phase, Yahya II.*

From the survey evidence, it can be shown that the first settlements emerged predominantly within the eastern area of the basin, close to the perennial water source provided by the Rud-i Gushk outwash. Between the later 6th to mid 4th millennium BC, settlement expanded, first through the utilisation of natural floodwaters and later through the development of field systems, which provided controlled flood irrigation. During Yahya VA (3600 - 3400 BC), settlement reached the highest level during any period. During the Iblis IV - V (3400 - 3200 BC), settlement numbers began to decline, eventually leading to a complete collapse lasting from around 3200 - 200 BC, during which there is no evidence of settlement in the basin (Prickett, 1979: 52-4). During Yahya II there is some evidence of new sites emerging, but with a complete relocation to the previously uninhabited western area of the basin where there are no natural water sources. Within the Sasanian period, there is evidence of a massive settlement explosion, apparently fuelled by the development of qanat irrigation, which had probably already started to be developed during the preceding period. The layout and nature of this settlement strongly suggests "substantial administrative and military control" over the area (Prickett, 1976: 176). One factor which needs to be born in mind, and may temper the indication of an explosion of settlement numbers during the latest two periods, is the fact that both lasted around twice as long as the 4th millennium phases.

Eastern Bardsir Survey

A survey covering a 250km^2 area was carried out along the Chari and Ghubayra rivers in the eastern Bardsir plain in inland Kerman. The survey was conducted over a two-

week period in 1976 (Sajjadi & Wright, 1990) in order to extend the earlier Bardsir plain surveys undertaken between 1964 and 1966 in conjunction with the Iblis project (Fehérvári & Caldwell 1967; Chase, Fehérvári & Caldwell 1967; Fehérvári, 1968). Owing to the lack of stratigraphic control for the Sasanian and Islamic periods within this area, the primary focus was on prehistoric and proto-historic horizons although the later periods were covered as well (Sajjadi & Wright, 1990: 4). The results of this work can be summarised from the 'Catalogue of Sites' (Sajjadi & Wright, 1990: 31-2). The distinction made there between Sasanian 'Red' and 'Buff' wares has been overlooked in the current analysis, as not enough information is provided to suggest a chronological distinction between the two, and no such distinction has been noted elsewhere.

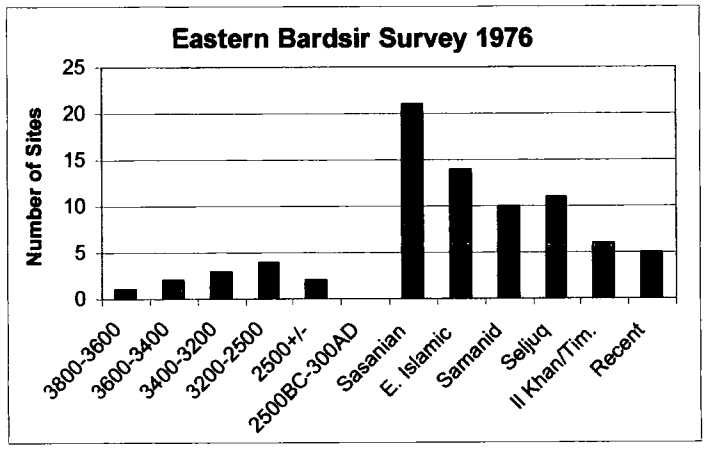

Fig. 5 *Number of sites by period in the eastern Bardsir area based on the 'Catalogue of Sites' in Sajjadi & Wright 1990: 31-2.*

There are a number of striking parallels between the long-term site profile from this survey and that of the Shah Maran-Daulatabad survey, although the site sample is smaller and the work much less detailed. In particular, one can point to the apparent long settlement hiatus in the last few millennia BC (Fig. 5), although the authors do mention that a few small sites with rather undiagnostic sherd material were identified as probably belonging to this period (Sajjadi & Wright, 1990: 22). In addition, despite the fact that it was stressed that the Sasanian and Islamic periods remained poorly defined, the increase in site numbers during the Sasanian period is striking, particularly when compared with the low numbers occurring throughout the prehistoric and proto-historic periods, which were the main focus of the survey. The authors suggest that the significant increase in site numbers observed during the Sasanian period can be connected with village growth, centred largely around a single urban site of over 100

hectares (Sajjadi & Wright, 1990: 24, 26). One caveat to add is that the apparent dramatic decline in the number of sites during the early Islamic period is probably partly related to the length of periods represented in the breakdown. Whereas the Sasanian period might also include Parthian and Umayyad finds, the early Islamic period may only be represented by the well-known Samarra horizon wares, possibly representing as much as a three-fold decrease in period length.

Diyala Basin Survey

The survey of an 800km² area of the Diyala basin was undertaken between 1957 - 58 as part of the Diyala Basin Archaeological Project, directed and initiated in 1937 by Prof. Jacobson on behalf of the Oriental Institute (Adams, 1965: vii-viii). The Diyala Basin, situated in the northernmost area of the Mesopotamian lowlands, represents a fertile tract made up of alluvial deposits laid down by the Diyala River; a tributary of the Tigris (Adams, 1965: 3). The project had a deliberate multi-period focus, as the aim was to chart changes in settlement size, concentration and location, from the first sedentary occupation in the 4th millennium BC up to the modern era. In addition, an attempt was made to characterise the nature of irrigation during different periods and to establish the orientation of settlement in relation to irrigation regimes. Despite the comparatively early date of this survey, the results are presented in a way that makes it is possible to present not only a count of settlements in different periods, but also more detailed information related to new, old and abandoned settlements (Fig. 6).

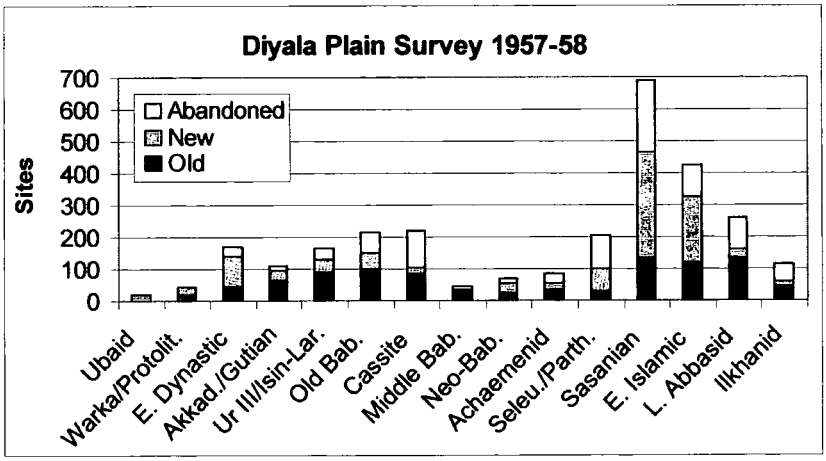

Fig. 6 *Plot of the number of new, old and abandoned sites within the Diyala Basin from periods ranging from the 4th millennium BC to the 15th century AD, based on Adams, 1965: 34, 37, tables 10-20, 23, 24.*

The survey provides evidence of low levels of sedentary settlement emerging adjacent to natural watercourses mostly in the lower Diyala Basin from the 4th millennium BC. The number and density of settlements then appears to rise, although up until the Cassite period only limited changes occur. Within the Cassite period, substantial numbers of settlements were abandoned, and by the Middle Babylonian period settlement levels may have returned to a level equivalent to that noted during the earliest period of sedentary agriculture. This situation was only very gradually reversed with a slight increase in the number of sites during the Achaemenid period. By the Seleucid and Parthian periods, significant change had occurred, with a deliberate policy of urbanisation and significant increases in population. During the Sasanian period, there was a massive explosion of settlement and population, accompanied by the development of large-scale irrigation systems. Throughout this period, the process of urbanisation continued, with the enlarged population being supported by the massive Nahrawan Canal that diverted a large additional body of water from the Tigris into the Diyala basin. After the Sasanian period, the region appears to have fallen into a pattern of long-term decline. The crisis brought about by the collapse of the Sasanian Empire may have been brought back under control during the Abbasid administration, but the bad management of rural resources and the progressive fragmentation of a centralised administration meant that the region never fully recovered. After the Mongol invasion, the level of settlement appears to have further declined, reaching a low point not seen since the last major settlement collapse during the 1st millennium BC (Adams, 1965).

A general trend noted within each of the three widely distributed surveys discussed is the apparent dramatic growth in settlement during or leading up to the Sasanian period, with a drop off during the Islamic period. This is further supported by a more anecdotal source for the Deh Luran plain in southwest Iran. During the Achaemenid, Seleucid and Parthian periods in the Deh Luran, only 11 sites were counted during American led surveys in the area, and they all appear to have been fortresses of some kind. In the Sasanian period, there were at least 100 sites, ranging from small farmsteads to very large towns. After that, the number of sites started to decline once more, and by the 12th century it appears that settlement on the Deh Luran plain had completely collapsed

(Hill, pers. comm. 2003[13]). How then, are we to explain what appears to be a prevailing trend across a very wide area?

The Question of Recent Settlement Change

The factors responsible for the apparent dramatic growth in settlement numbers across broad geographic areas during the Sasanian or Hellenistic period are likely to be many and complex, however it does however seem that this growth pattern can be connected to a number of factors that are at least partially understood. Amongst the most important must be the centralised administrative control that was exerted over the area, particularly under the Sasanians (D. Morgan, 1988: 9), which produced the conditions needed for unified regional-scale processes to occur for the first time (Wilkinson, 2003: 97). Significantly, the Sasanian administration did not only invest in military conquest and territorial gain, but also in what has been described as a strategic economic policy, involving the construction of impressive civil works (Piacentini, 1985: 60-61). Perhaps most important amongst these state investments were the intensive irrigation systems developed within the Tigris-Euphrates basin of southern Iraq and southwest Iran, which enabled a vast increase in the agricultural productivity of the area (Wilkinson, 2003: 92-93) and therefore, presumably to the economic output from this area to other parts of the Sasanian Empire. Supporting these developments were fiscal systems based on communications, taxation, monetary regulation and the active support and development of trade (Huff, 1987: 302, 307; D. Morgan, 1988: 11). In southern Iran in particular, the area prospered in its role as the political centre of the Sasanian administration, and ports on the Persian Gulf coast (Bushehr in particular) were to act as the main entrepôt for the significant growth in maritime trade that appears to have occurred during this period (Whitehouse & Williamson, 1973: 31-2). Within the interior of Fars, the trend towards urbanisation seen elsewhere within the Sasanian Empire appears to have been followed with the growth of a number of well-organised, somewhat regimented urban centres with closely integrated religious, military, political and civilian elements such as Qasr-i Abu Nasr (Whitcomb, 1985), Gur (Huff, 1974; Huff & Gignoux, 1978), Qal'a-ye Dukhtar (Huff, 1976; Huff & Gignoux, 1978) and Darabgird (P. Morgan, 2003b). Finally, historical evidence suggests that large populations were forcibly settled in certain rural and urban areas to increase the economic output: both in terms of primary

[13] Information drawn from a paper by David Hill entitled: 'Scientific analysis of ceramics from the Deh Luran plain, SW Iran', given at a workshop organised by St John Simpson and Seth Priestman on 'Sasanian Pottery: Dating, Definition and Distribution' at the British Museum on July 16th 2003.

agricultural produce and by increasing the production of other commodities through the work of artisans moved into urban centres (Daryaee, 2003: 2).

The changes that occurred during the Sasanian period can only really be adequately explained by taking a perspective that looks back into preceding periods. The settlement expansion in the Shah Maran-Dualatabad basin was primarily explained in terms of the development of qanat irrigation, which saw significant development during the Parthian period. Similarly, the Sasanian period developments at Bushehr appear to have a history that can be traced back apparently as a continuous sequence of development (see Carter, Challis, Priestman & Tofighian, Forthcoming) at least as far as the Kaftari period, when the main regional centre was situated at Liyan (Potts, 2003: 157, 159). Obviously from the data available in the Williamson Collection, which only begins with the Sasanian period, it will not be possible to explore the causes of change at the beginning of the period. Instead what it should be possible to address are the changes from the beginning of the Sasanian period right up to and beyond the arrival of European powers within the area.

In contrast to the archaeology of the pre-Islamic era, the attention that has been given to the broad patterns of settlement change covering the recent historic period in southern Iran has been minimal, and as a result these changes remain less well understood. As one can see above (Fig. 4, Fig. 5, Fig. 6), there is some evidence to suggest that the number of settlements declines after the Sasanian period in the Shah Maran-Daulatabad basin, the eastern Bardsir plain and the Diyala basin. Overall, however, the Islamic period is dealt with very crudely. Perhaps one of the most sophisticated and detailed attempts to deal with changes occurring specifically within this later period is the survey of the Marv-Dasht plain in inland Fars.

Marv-Dasht Survey

William Sumner directed a survey of the Marv-Dasht plain/Kur river valley from 1967 - 1969, focusing primarily on the pre and early historic development of the area (Williamson, 1969; Whitcomb, 1979; Sumner & Whitcomb, 1999). All of the Sasanian and Islamic finds that he made were handed over to Williamson, who undertook a preliminary analysis based on these finds, and on further information that he and Prickett recorded when they later revisited a number of sites in the area. During this

analysis the ceramic finds were sub-divided into four periods following Adams's periodisation of: AD <800; 800 - 1150; 1150 - 1500 and >1500 (Adams, 1981). These date ranges were supported by the evidence that Williamson acquired from the spoil heaps at Qasr-i-Abu Nasr, from the surface at Naqsh-i-Rustam and Istakhr and from the excavated sequences at Sirjan, Siraf and Kilwa in East Africa (Williamson, 1969: 1-2). Although Williamson never analysed this data himself, the same periodisation that he devised was later adopted by Whitcomb. During Whitcomb's doctoral research into the excavations of Istakhr and the surrounding area, he brought together the information that Williamson had compiled, combining it with Sumner's field notes and a series of aerial photographs taken of the area by Schmidt, to produce a series of maps of the area showing the changes in settlement density by period. These maps appeared in Whitcomb's thesis, and were later reprinted in publication (Whitcomb, 1979: 369) (Fig. 7).

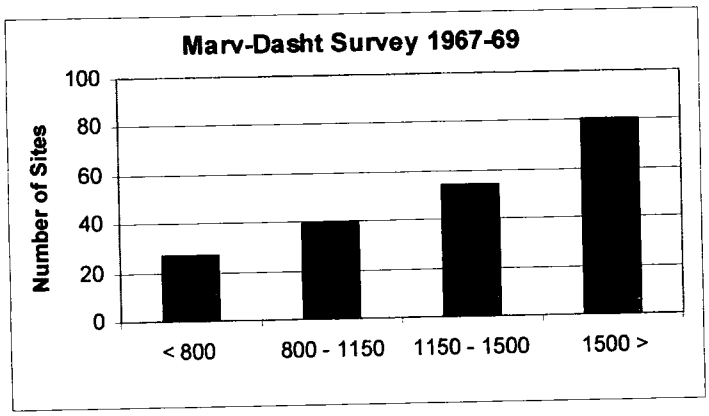

Fig. 7 *Site counts by period from the Marv-Dasht survey based on Williamson's period divisions presented in Sumner & Whitcomb, 1999: table 2, 314.*

What the Marv-Dasht survey results show is that there was a progressive increase in settlement numbers over time. Whitcomb explained this pattern as being directly related to the development of qanat-irrigation agriculture, initially during the Sasanian period but then increasing in step with the growing prosperity of the nearby city of Istakhr in the period between AD 800 - 1150. Later on, during the period AD 1150 - 1500, after the city's decline, settlement tended to be concentrated in larger but increasingly dispersed settlements (Whitcomb, 1979: 369-70). Further analysis of this group has also been undertaken more recently, combining Williamson's chronological framework with details on site morphology (Sumner & Whitcomb, 1999).

Ras al-Khaimah Survey

While the results from the Marv-Dasht survey, which includes material from 210 sites, provide an initial model for the area (Whitcomb, 1979: 370), the period breakdown is still crude, and as a result the potential for understanding the specific causes of settlement growth in the area remain limited. Looking at evidence collected from the other side of the Persian Gulf in Ras al-Khaimah, there is now a growing body of information to suggest that significant changes in the scale and nature of settlement have taken place throughout the Islamic period. Summarising the results derived from a number of separate surveys carried out by different authors, including those in Jazirat al-Hulaylah, the coastal shell middens in Jazirat al-Hamra, the Khatt oasis and Wadi Haqil, Kennet was able to combine the findings and suggest an overall pattern (Kennet, 2002). While at the same time acknowledging that the results from these different projects are not necessarily altogether inter-comparable, they do provide a picture of a progressive increase of settlement throughout the Islamic period, with some locational shifts and a noticeable breakdown in the level of settlement between the 11th - 13th centuries, with a particularly dramatic increase in settlement following that period (Kennet, 2002: 153-54).

In order to test this pattern more thoroughly, Kennet conducted a detailed survey in 1994 focusing on three transects running across the Sir and Jiri plains, the main agricultural core of Ras al-Khaimah. The dating of sites within the survey was based on certain type fossils securely dated by other excavations within the area, including Kush and al-Mataf. Together, the results from this survey suggested that there had been a fairly constant level of settlement from the Wadi Suq period right through to the 13th century AD, but that during the 14th century the level of settlement increased dramatically and remained high through to modern times (Fig. 8, see Kennet, 2002: 56-58). In addition to these changes in the level of settlement, there appears to have been a number of important changes in the nature and location of settlement during different periods. For example in the Abbasid period, the evidence for permanent settlement is low and the majority of activity appears to have been centred on the coast. During the 11th - 13th centuries, despite evidence from other surveys, there were in fact a number of fairly substantial village sites such as Kush, as well as levels of rural settlement equal to those that occurred during the Sasanian/Early Islamic period. In the al-Mataf period, from the 14th century, there appears to have been a settlement boom across all areas of

the survey, although far less so in the inland area covered by the Khatt oasis transect. Later on, in the post al-Mataf period, after the 16th century, this area sees a significant rise in the level of activity; a pattern that is also reflected in the Wadi Haqil survey, which saw a particularly large rise in the number of sites during the 18th century (Kennet, 2002: 160-61, fig. 5, 12).

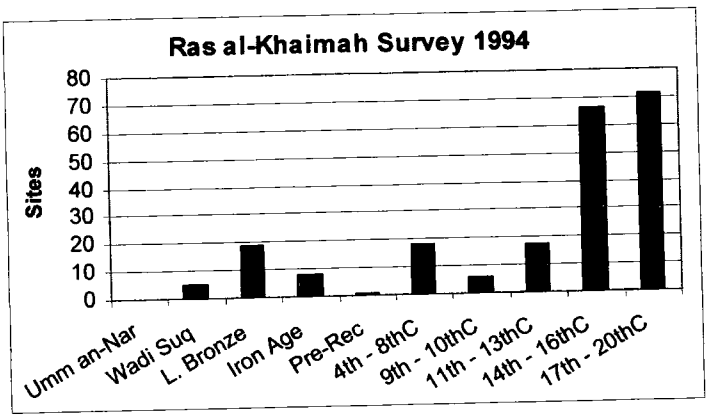

Fig. 8 *Site count by period based on the 1994 survey of the Sir and Jiri plains in northern Ras al-Khaimah, taken from Kennet, 2002: fig. 9.*

The overall lesson that one can learn from the work in Ras al-Khaimah is that the scale, location or nature of settlement instead of being stable and unchanging during the last few hundred years, in fact went through important transformations. The corollary of this realisation is that society, it culture and economy were also likely to have changed during this period. As such the results provide a clear justification for the use of survey, which is the best-equipped technique for dealing with wide-scale and long-term processes of change, to focus on the later historical period in its own right. Although it is clearly informative to take an even longer term perspective, as has been demonstrated with a number of the surveys discussed above, there are still particular recent events that can only be understood through survey that takes a detailed approach to the chronology and location of activity within the more recent past.

3.2 ANALYSIS OF SETTLEMENT CHANGE

The Initial Model

The most basic type of settlement distribution considered here involves taking the Williamson Collection assemblage as a whole, (the Marv-Dasht material has been

excluded as this it is not complete[14]), sub-dividing the material according to the seven-phase periodisation discussed above (Chapter 2), and looking at the number of sites with material from each of these periods across the whole of the survey area.

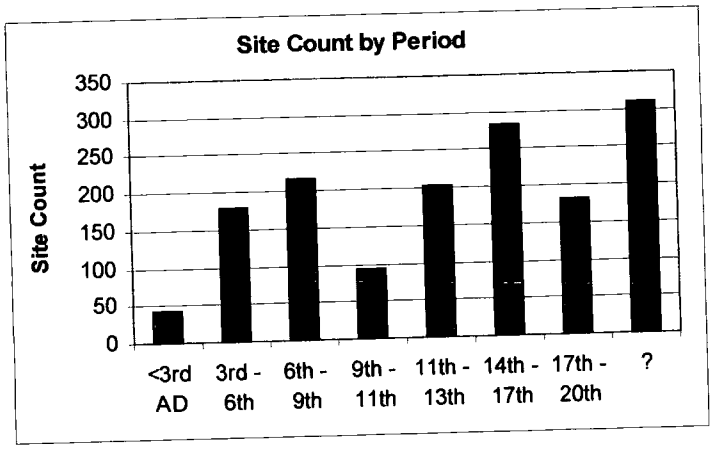

Fig. 9 *Number of sites by period for the whole of the Williamson survey.*

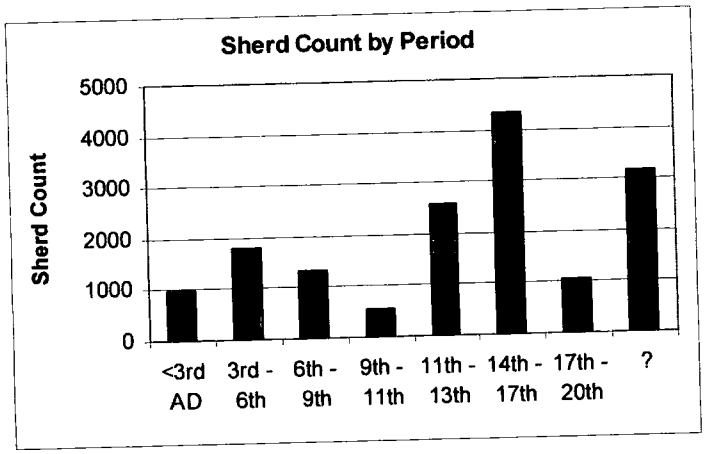

Fig. 10 *Number of sherds by period across the whole of the Williamson survey.*

The most significant features in this analysis are: the slight rise in the number of sites between the 3rd - 9th centuries and the dramatic fall off in the number of sites between the 9th - 11th centuries, after which there is a progressive increase in the number of sites reaching the highest level for the whole of the sequence between the 14th - 17th centuries, with a significant fall-off after this. For both the earliest and latest periods represented, the low figures are probably partly a reflection of the fact that both

[14] Unless otherwise stated the Marv-Dasht assemblages will be excluded in the rest of the analysis, as its inclusion would skew most types of result, owing to the fact that the assemblage is predominantly comprised a single ware covering a single period.

prehistoric and modern materials were deliberately omitted from the survey assemblage. A comparison of Fig. 9 and Fig. 10 indicates that there is a general correlation between the relative proportion of sherds in the collection belonging to each of the periods and the number of sites represented by those same periods across the survey. The main points of departure to note are the fact that there is a greater disparity between the sample sizes for the 3rd - 11th centuries and the 11th - 20th centuries than appears in the number of sites represented across this divide. In addition, while the sample size for the 6th - 9th century period is actually smaller than it is for the 3rd - 6th century, the number of sites increases, as noted above. Similarly, the sample size for the 17th - 20th century period is far smaller than that betrayed by the number of sites represented. Again this most likely reflects a deliberate decision to select out the latest material, though possibly it also reflects the tendency of later sites to continue in occupation into recent times.

Perhaps the most striking feature overall is the extreme drop-off in the number of sites between the 9th - 11th centuries. Whether this is a true reflection of the situation remains to be seen. Two factors may have influenced this result. First, there is the question that has already been discussed, that some of the pre-Samarra horizon wares, in particular ALK.3, but possibly others too, may have continued in circulation into this period, and therefore the sharp segregation that has been created here may not actually be warranted. The second factor, one that is partly related to the first, is the fact that the number of different wares belonging to the 9th - 11th century period are actually rather limited and do not include Coarse Wares. This fact could have significant implications for the analysis, as there does not appear to be any immediate solution to the problem. Even if one omitted the Coarse Wares from the 3rd - 9th century period assemblages in order to make a better comparison, then one would only introduce a new problem: the fact that the proportion of Coarse to Glazed Wares appears to have shifted significantly between the Late Sasanian/Early Islamic and 'Samarra horizon' periods (Kennet, 2004: table 31). This problem should not however have a significant effect on the site dating and distribution analysis, as this exercise is not dependent on the composition of assemblages; rather it rests on the dating provided by the different ceramic classes. If Williamson was successful in collecting material diagnostic of the periods of occupation of the sites that he visited, then all categories of material - whether they are Coarse

Wares, Glazed Wares, figurines or storage jars - should hold an equal weight as elements of site dating evidence in the final analysis.

Improving the Site Periodisation

Returning to the problem of attempting to create a clear segregation between all of the wares across the period boundaries that have been set, referred to in Chapter 2, it may be relevant to consider an alternative form of periodisation. In the second approach that has been considered, one can assign a whole value to any class that falls within one of the designated periods. This means that for any given site, the total number of sherds belonging to each of the defined periods is totalled up with each sherd providing the value '1'. On the other hand, where the accepted date of a particular class cross-cuts two periods, then a half value can be placed within each of those periods. The same follows for classes dated to three or four periods, but with a third value or quarter value added to each period respectively. What this second periodisation allows is a more cautions approach to ceramic dating as well as removing the need to squeeze certain classes into a period in which they only partially belong. The obvious effect of this second approach is that the spread of dates given for a sample including material that cross-cuts period divisions will appear more evenly distributed than they might in reality be. For the sake of convenience, the first periodisation described is referred to as the 'whole [unit] periodisation' and the later more refined periodisation as the 'fractional [unit] periodisation'.

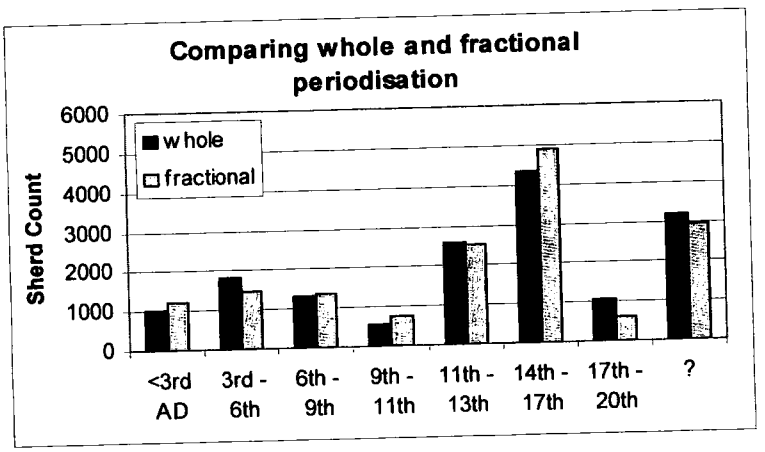

Fig. 11 *Number of sherd by period based on the 'whole periodisation', where every ware is assigned to a single period, and the 'fractional periodisation', where fractional values are assigned to wares that cross-cut period divisions.*

Neither of these systems of ceramic periodisation is ideal. In the first, some of the wares tend to be forced into a chronological period that is narrower than the dating evidence actually allows. In the second, a period may be represented as having a presence on a particular site when hypothetically the site might have been entirely abandoned at that time. One thing that the comparison of these two systems of ceramic periodisation indicates is that, despite the differences of approach, both in fact provide a similar basic overall trend, and where there are differences, they appear to be relatively minor. Probably the most significant differences to note in the results produced by the two systems are that the minor peak in sherd numbers between the 3rd - 6th centuries and the trough in the sherd numbers between the 9th - 11th centuries are both reduced in the 'fractional periodisation'. This is due in the first instance to a wider date range being given to some of the less well defined Coarse Wares, which under the 'whole periodisation' follow the breakdown provided by related wares between the 3rd - 6th and 6th - 9th century periods, based on their division across Periods I and II in the Kush sequence (Kennet, 2004: tables 32 & 33). In the second instance, the increase is due to the inclusion of ALK.3 in the post 'Samarra horizon' period, which is probably a more accurate reflection of the situation, as there is evidence from Kush to suggest an overlap between Kennet's equivalent TURQ.5 and some of the earliest Samarra type fossils (Kennet, 2004: table 3); a situation that also seems to be reflected in the Site A sequence at Siraf (Whitehouse, 1968: 14-15). In addition, the 9th - 11th century assemblage is increased in the 'fractional periodisation' by the inclusion of some ill-defined classes such as GRAF.D and GLAZ.N-ID. Finally, the corresponding rise in the 14th - 17th century level and fall in the 17th - 20th century level in the 'fractional periodisation' is produced as a result of the Underglaze Painted Wares being included in the earlier period, rather than them being seen as restricted to the latter period, as is the case with the 'whole periodisation'.

It is possible, as has been shown above, to compare different systems of ceramic periodisation by distributing the sherds in alternative ways across the period divisions. At the stage of converting this data into site counts, the process becomes more complicated. Whether a site is or is not represented in a particular period is a question that clearly only has two possible answers; the fact that it might be 0.25 or 30 sherds representing that period is a point that does not register, unless one introduces the issue of quantity or percentage of representation. In an earlier graph that was presented

showing the distribution of sites by period (Fig. 9), every site was counted that appeared as having material from that period following the 'whole periodisation' system. Clearly if one extends this same principle to the 'fractional periodisation' system, then one can expect the site count to be higher; as even a fraction of a value represented in a period will still count as a positive occurrence for that site within that period.

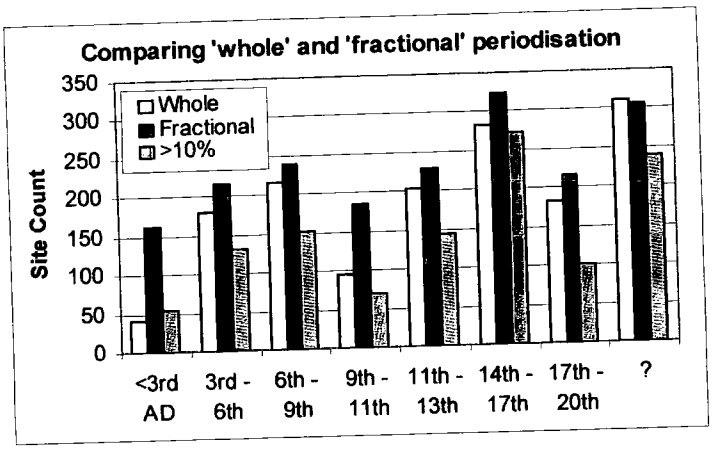

Fig. 12 *Number of sites by period based on the 'whole' and the 'fractional' periodisation and number of sites with more than 10% of the assemblage relating to each period (for the last value see below).*

In the graph above (Fig. 12), one can see a general echo of the situation observed in the previous graph (Fig. 11). The differences in result produced by the two treatments of the data are based on the same dating problems of specific wares, however the effect this has on the site count is rather more pronounced, particularly for the pre-3rd and 9th - 11th century periods. The reasons for the rise during the 9th - 11th centuries in the 'fractional periodisation' have already been discussed. Those seen in the pre-3rd century level are principally due to the fact that the bulk of the ALK class (ALK.1), which cannot be closely dated, has been given the broadest possible dating in the 'fractional periodisation', which extends into the pre-3rd century, while in the 'whole periodisation' it was all included within the 3rd - 6th century period.

A pattern that can be observed across the majority of periods is the fact that the values for the new periodisation are higher as predicted. Equally predictable is the fact that the 'fractional periodisation' provides a more even distribution of sites across the periods, while the 'whole periodisation' produces a more punctuated distribution. The solution to this problem is to consider the percentage of a site's assemblage related to each

period, and to cut out instances where a period is represented in a site's assemblage by an insignificant component. One limitation to this is the fact that the size of site assemblages varies considerably within the Collection, so that an 'insignificant component' in an assemblage of 100 sherds is going to be very different to that within an assemblage of 10 sherds. For this reason, it is most convenient to consider what percentage of a site's assemblage relates to a particular period. In the analysis presented in the graph above (Fig. 12), an arbitrary figure of >10% has been taken as representing a significant enough proportion of a site's assemblage to suggest that it was occupied during that period. Clearly, the figure of 10% is arbitrary, though it should be sufficient to remove occurrences where only a fraction of a value relates to a particular period in assemblages of c.20 or more sherds. Using this figure, one can begin to isolate concentrated periods of occupation, rather than those represented by very low frequencies caused by counts based on a fraction of a value or a single sherd.

Although all three systems provide a slightly different results, and together convey more information than any one would on its own, it seems that the 'whole periodisation' is the least reliable, mostly because it relies on the crudest form of dating. One can also see that the problems that have been noted with the 'fractional periodisation', in particular the fact that periods with no activity might still be represented, appear to be resolved reasonably effectively by the inclusion of the >10% figure. Taking these two points into consideration, as well as the wish to maintain both accuracy and clarity in the presentation of results, the most economic solution appears to be to eliminate the 'whole periodisation' from the analysis and to deal only with the results derived from the 'fractional periodisation' and the >10% level from this point on.

Regional Distribution of Settlement

In terms of a regional analysis, there are different ways in which to approach the area covered by the Williamson survey. The survey as a whole covers a very extensive and rather loosely bound geographic area. Most of the archaeological surveys that have been conducted in this region have attempted to establish some form of geographic demarcation. Probably the best-defined examples are island surveys, notably Larsen's survey of Bahrain (Larsen, 1983). In other examples, a survey has been concentrated on a single valley system, basin or plain (for example, Prickett, 1976, 1979, 1986a, 1986b; Adams, 1965; Sajjadi & Wright, 1990; Kennet, 2002). Williamson's survey, on the

other hand, was inter-regional. Nevertheless, his work was still geographically bound, though rather more loosely. In this case the aim of the survey was to explore changes in interaction between the Iranian littoral and its hinterland; a divide often referred to generally as the *garmsir* (warm air) and *sardsir* (cold air) zones.

In addition, Williamson's survey was sub-divided into smaller units, each identified by an area prefix. In some cases the areas appear to correspond generally with geographically defined entities, for example K = the Minab plain, H = the Bushehr peninsula or P = the upper Halil-Rud. In other cases his Regions appear to merely act as convenient sub-divisions of the area into approximately equal portions, particularly along the coast, for example Regions A, B, D, F, J and L. Taking this into consideration along with the fact that these areas may have been laid out before the survey began, and therefore could potentially bear no correlation to significant culturally or geographically defined boundaries, it may be important to look at alternative ways of sub-dividing the survey area, especially as more detailed topographic information becomes available. As an initial starting point however, the regions that Williamson defined provide convenient units with which to begin the analysis of the data. An important point, raised in Chapter 1, that has to be born in mind throughout the analysis, is the fact that the survey was not carried out in a uniform fashion across each of the survey Regions. This becomes particularly clear when one looks at the number of sherds from each Region contained in the Ashmolean Collection (Fig. 13). One can see that the only Regions with more than one thousand sherds are H, K, P, Q and S. Region R has slightly less and most of the rest fall close to or just under 500, with the remaining Regions: F, J, L, MDS and Z, falling significantly under this figure.

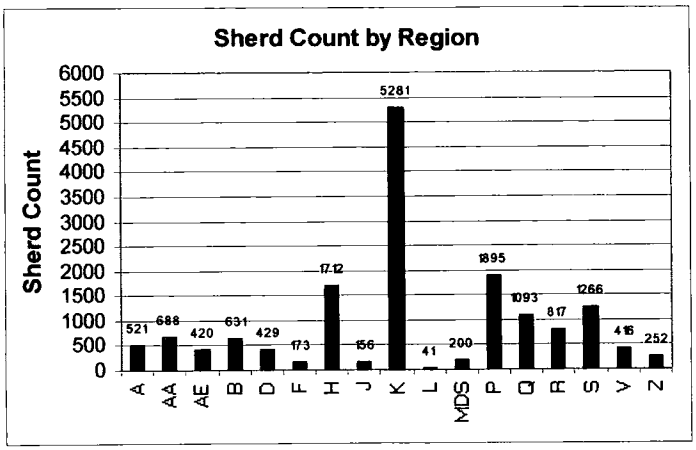

Fig. 13 *Number of sherds in the Williamson Collection broken down by Region. For Region locations see map* (Fig. 3).

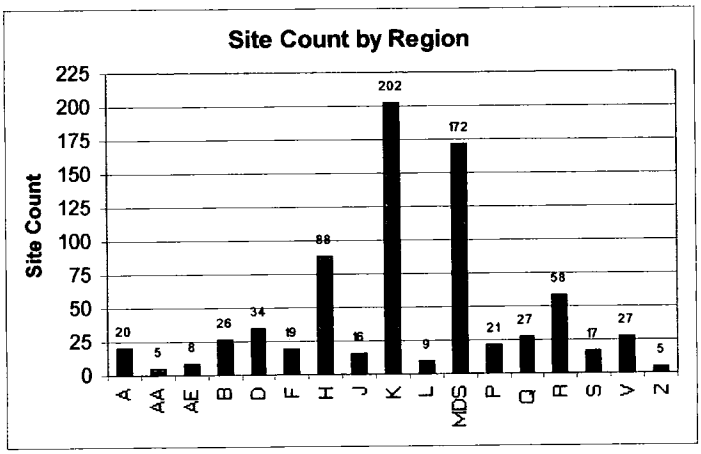

Fig. 14 *Number of sites represented in the Williamson survey broken down according to the Regions that Williamson defined. For Region locations see map* (Fig. 3).

From the site counts (Fig. 14) one can see that the only Regions with more than 50 sites are H, K, MDS and R, the remaining Regions have close to half of that figure, and Regions: AA, AE, L and Z have less than 10 sites. Some of these Regions are problematic. MDS, the Marv-Dasht material, has already been mentioned, though here one can see that an additional problem with the data for this Region is the fact that most sites have just one or two specimens represented in the Collection. For this and other reasons that were mentioned before (See Note 14, p.82-3), the data will continue to be excluded from the analysis. Region S, the Sirjan Survey, registers as one of those with a high sherd count. While this material is useful, it is not clear whether all of the material from this survey has been dealt with. No attempt has yet been made to overlap the survey work with the finds from the excavation at the site which have already been dealt with in publication (Morgan & Leatherby, 1987), and therefore the possibility remains

that some of the survey finds may still be boxed with the rest of the excavated assemblage. Finally, Regions AA and AE are both islands, (Hormuz and Kish), and while the sample sizes for each is reasonably high, the material was only collected from a few sites. Overall what one can see then is that Regions H and K stand out in all respects as being particularly significant, that the majority of the remaining Regions fall roughly within the 500 sherds and 25 sites parameter, and that Regions L, and Z are probably of negligible value.

Coastal Areas

Above (Fig. 13 and Fig. 14) it was shown that Regions H and K have by far the highest sherd and site counts for any area of the survey, it appears logical therefore to begin by presenting the data from these areas as these are the most likely to yield reliable results.

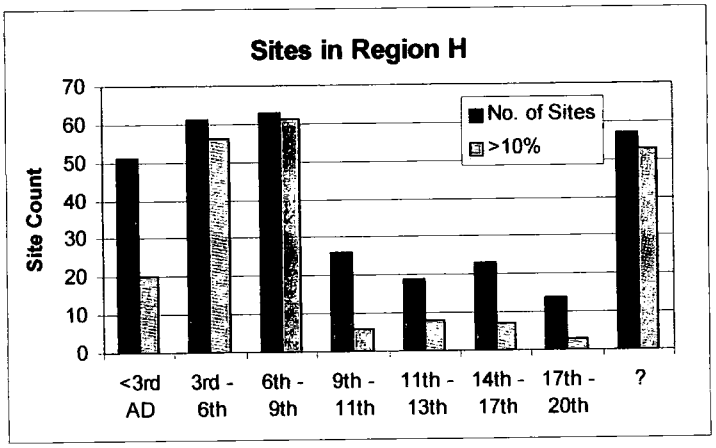

Fig. 15 *Region H, the Bushehr peninsula, showing the number of sites and the number of sites with more than 10% of the sample from each period.*

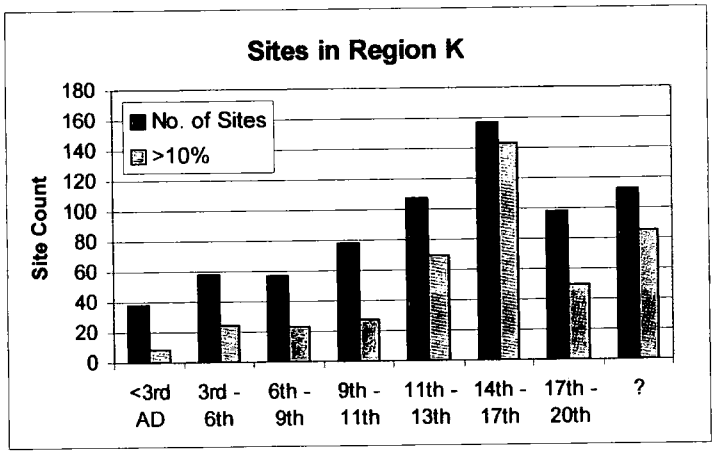

Fig. 16 *Region K, the Minab plain, showing the number of sites and the number of sites with more than 10% of the sample from each period.*

The Bushehr peninsula and the Minab plain are both situated on the Persian Gulf coast, but are separated by a considerable distance; the former at the western limit of the coastal survey and the latter towards its eastern limit. What becomes immediately apparent when comparing the results from these two areas (Fig. 15 and Fig. 16) is that they follow almost opposite patterns in terms of the number of sites recoded across the period represented in the survey. While the Bushehr peninsula experiences its highest number of sites during the Sasanian and Early Islamic periods, with a dramatic fall off from the 9th century (Samarra horizon) onwards, the Minab plain starts off with a low number of sites which gradually and progressively increase without any major jumps of breaks up to a peak between the 14th - 17th centuries. Without wishing to go deeply into an explanation of these opposing trends at this stage, both conform closely to what is known about the major urban and political developments in these regions. In Bushehr, the peak coincides with the period when Rishahr and Halileh appear to have developed as major ports and the area is thought to have become the main centre for Sasanian trade within the Persian Gulf. The Minab plain, on the other hand, reached its economic peak during the time when Hormuz held the monopoly of Persian Gulf trade. The data also indicates that there was a significant step up in the number of sites during the 11th - 13th centuries when Old Hormuz, situated within the delta itself, started to become an influential trading power (P. Morgan, 1991: 70).

One factor that makes the direct comparison of these two areas more difficult to sustain, is the fact that while the Minab plain represents a fairly sizable region, the Bushehr peninsula is a relatively small self-contained area, and the increase in number of sites occupied could be seen merely as the development of two important urban centres and their extensive suburbs. What therefore needs to be considered is the pattern relating to site occupation in the surrounding areas, particularly in relation to the western part of the survey around the Bushehr peninsula. Unfortunately, for reasons that remain obscure, no material was ever collected by Williamson for Regions I - north of Bushehr, and G - Rud-i-Mond to the south of Bushehr. The two areas closest to the peninsula are Regions F - in the area around Siraf, and D, from Neran to Naband; Region E, from Naband to Tahiri, was also omitted from the survey. These are all areas that it should be possible to supplement both through new survey (Carter *et al*, Forthcoming) and from previous work undertaken in the area (Stein, 1937: 234-41; Whitcomb, 1987; 2005; Wilkinson, 1974; 2005).

The main difference between the trend encountered in Region H and that in Regions F and D (Fig. 17 and Fig. 18) is that the first period registers more significantly in the former, and that the increase between the 3rd - 9th centuries is much more significant in the latter. One element that is surprising is the fact that the 9th - 11th centuries are not well represented in Region F. One might well expect the site of Siraf, which prospered during that period, to have produced an increase in site numbers in the surrounding area. The fact that this does not appear to be the case may suggest that the Region F data is somehow incomplete. It is clear that Williamson worked at the Siraf excavations, but it has not yet been established how he integrated his survey work from this area with the rest of the project.

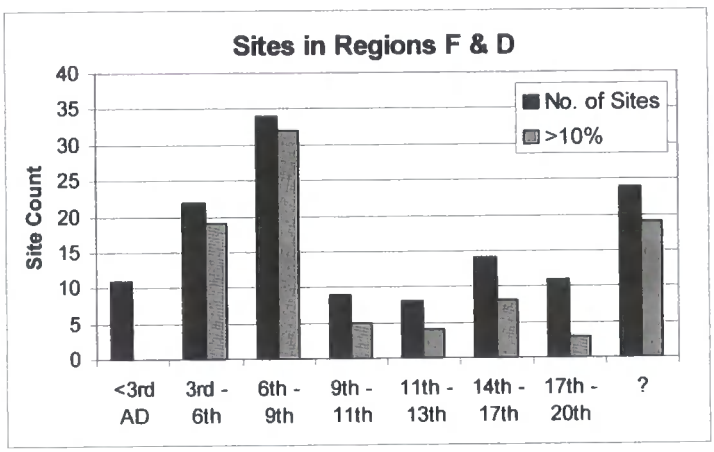

Fig. 17 *Regions F & D, the closest available to the Bushehr peninsula, showing the number of sites and the number of sites with more than 10% of the sample from each period.*

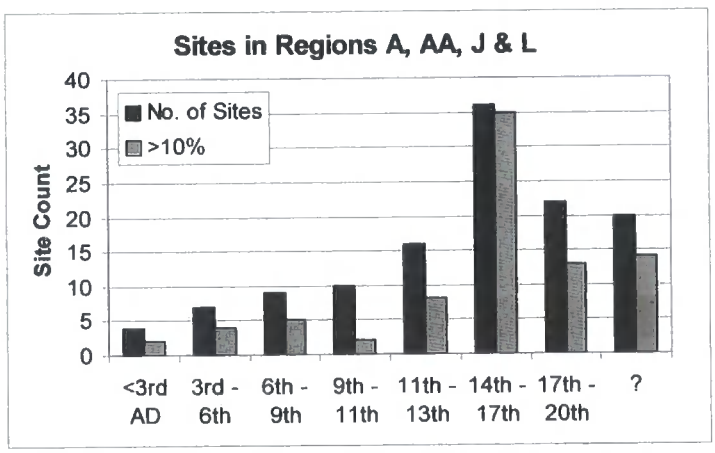

Fig. 18 *Regions A, AA, J & L, all adjacent to the Minab plain, showing the number of sites and the number of sites with more than 10% of the sample from each period.*

Turning to the differences between the trends encountered in Region K and Regions A, AA, J and L (Fig. 16 and Fig. 18), the most significant feature to note is that the increase in site numbers between the 11^{th} - 17^{th} centuries in the latter appears to be far more dramatic, although obviously the trend is based on much less data. What appears striking in both these examples is that the overall pattern for the coastal areas close to Bushehr and adjacent to the Minab plain conform very closely to these two key areas within the survey. Bearing in mind that Regions H and K are both supported by relatively substantial data, and therefore provide the most reliable information for anywhere in the whole of the survey, there is an added significance to the fact that the settlement patterns for these areas are reflected in the neighbouring Regions. This fact appears to add further weight to the suggestion that there is a genuine regional dichotomy in the basic settlement pattern between the western and eastern sectors of the coastal areas of the survey.

The remaining coastal areas, Region B - Lengeh to Qalat-i-Abdl Rahman, and Region AE - Kish Island, lying offshore from Region B (Fig. 19), fall at almost exactly the midway point between Regions H and K. Geographically this area abuts directly onto Region A on its eastern side, and many of the sites appear to fall within the same site cluster situated on the cape to the west of Bandar-i Lengeh. At the same time, Region B occupies the shore facing away from the Minab plain/Straights of Hormuz area at the mouth of the Persian Gulf, and in this sense, it could be seen as part of the Upper Persian Gulf area.

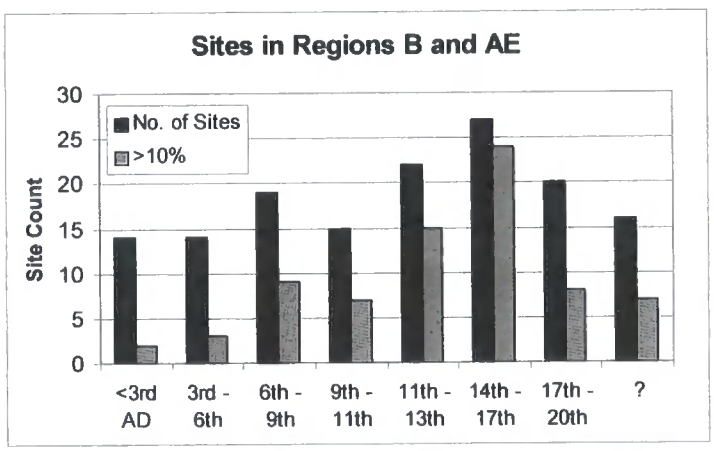

Fig. 19 *Regions B and AE, showing the number of sites and the number of sites with more than 10% of the sample from each period.*

The trend seen in Regions B and AE combined (Fig. 19) appear to fall somewhere in between the two major patterns that have been described for the western and eastern coastal areas. Compared to those patterns, there is greater continuity over the sequence as a whole, but peaks are encountered in the 6th - 9th century period and in the 11th - 17th century period. One of the key differences from the eastern distribution is the fact that the later peak is reached earlier in the 11th - 13th centuries. This may be a reflection of the importance of the island of Kish, which held an upper hand in the conflict with the powers centred at Hormuz, before the latter gained overall supremacy (Williamson, 1972e: 57). On the other hand, the mixed pattern revealed in this area could equally reflect the fact that Region B, in particular, lies at the interface between the two main zones that have been identified, and one may actually have to sub-divide the sites within this region to pin-point exactly where the cross-over between the two broad patterns lies.

Inland Areas

Each of the inland regions needs to be treated individually as there is no overall pattern that can be discerned (Fig. 20). Region P – the Upper Halil-Rud, experiences a high level of settlement from the beginning of the sequence, increasing into the Sasanian period but falling into decline in the Early Islamic period, perhaps more dramatically than the basic quantity of sites with material of the 6th - 11th period shows as indicated by the above >10% level. The number of sites then appears to stabilise into the modern period. Numerous prehistoric and 'early historic' sites were encountered in this area by Stein (Stein, 1937: 139-47), supporting the high count of early sites suggested by Williamson's coverage of the area.

Region Q - Rudan and Bulak, (between the Minab and the Halil-Rud drainage) forms what may at times have been an extension of the agricultural hinterland to the Minab plain. At the same time it provides the main link between the coastal delta and the Halil-Rud drainage up the Rudan and Manujan valleys, a connection which links this area into the inland system of Kerman and beyond into Baluchistan and the Indo-Iranian borderlands (de Cardi, 1951: 63; Lamberg-Karlovsky, 1972). As such it interesting to note that Region Q conforms essentially to the 'Minab pattern', but with the important difference that the highest number of sites occurs between the 11th - 13th centuries. One might take this to suggest that the apparent growth in the Minab area, which others have

linked to the importance of Hormuz as a trading centre (Kennet, 2002), was preceded by wider rural developments, perhaps linked initially to agricultural prosperity. Equally, the growth in settlement in Region Q could have been stimulated by the earlier rise of Old Hormuz during this period (P. Morgan, 1991). Another point to note is that the proportion of pre-3rd century AD sites is higher in this area than in the Minab plain; again, this situation is reflected in Stein's earlier survey of the area (Stein, 1937: 175-80).

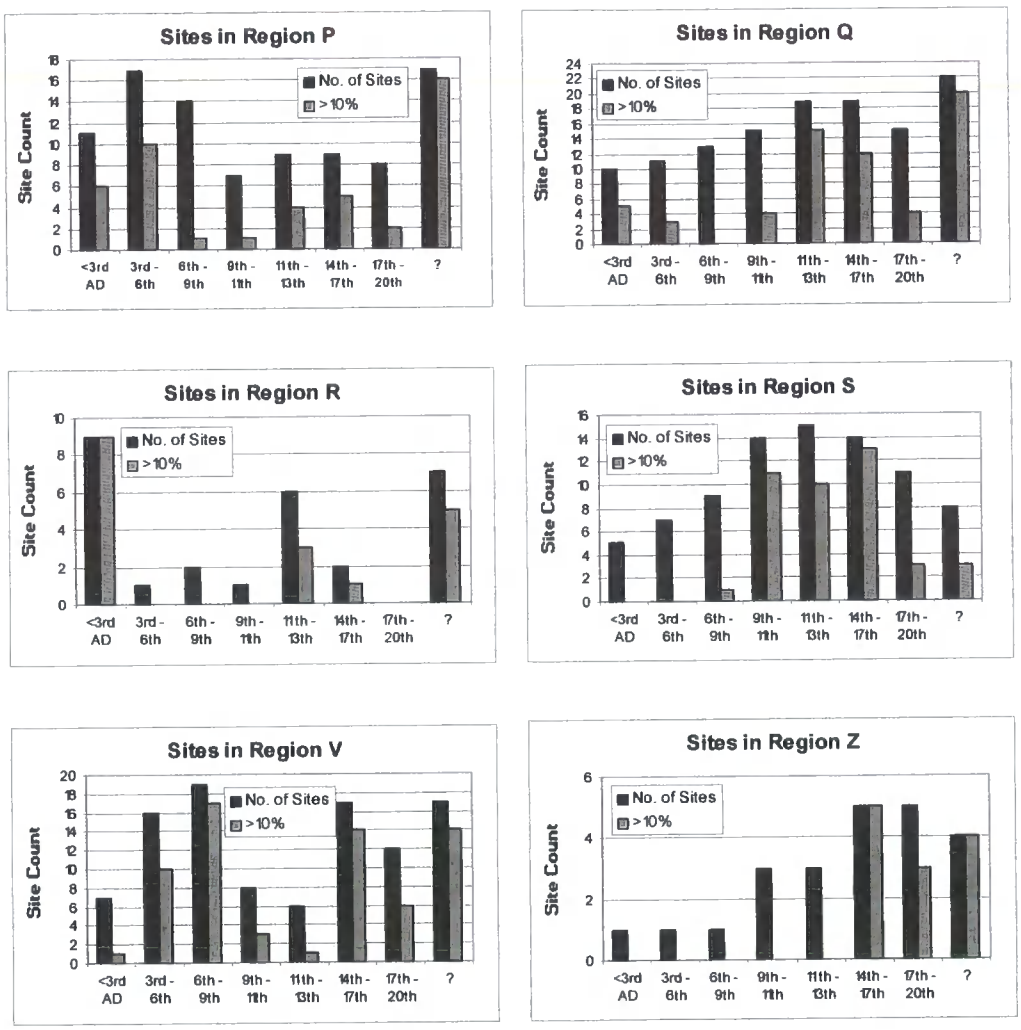

Fig. 20 *Inland Regions P, Q, R, S, V and Z, showing the number of sites and the number of sites with more than 10% of the sample form each period.*

Region R – Rud-i Gushk drainage (between Jiroft and Fars) is the same area covered by Prickett's more intensive survey undertaken between 1973-75. The site sample presented here is far more limited, and the chronological distribution strongly suggests some form of atypical data selection. The presence of a large body of prehistoric

material from this area is unusual within the Williamson survey, and in an earlier section it was proposed that this might have been due to work carried out in the region once Prickett was no longer involved in the project. The fact that there are a high number of pre-3rd century AD sites is however consistent with the results that Prickett produced for this area, as is the fall off in later periods. The prehistoric presence in the area has also been well attested more recently with the major discovery of 3rd millennium Bronze Age cemeteries and important architectural remains in the area of Jiroft (Madjidzadeh, 2003). Where there is a lack of consistency in the Williamson Collection data for this area is in the low level of Sasanian sites, and again this may indicate that the sample for this area is lacking in some of its most significant elements.

Region S – the Sirjan Survey shows an even profile with a progressive increase in sites from the earliest period through to a peak extending from the 9th - 17th centuries and tailing off again into the modern period. The high level of medieval 'occupation' may be consistent with the growth of the city of Sirjan between the 9th - 11th centuries. What is more surprising is that this was sustained into the period after the city's decline.

Region V – represents the Shiraz area down towards Region B. This is the only inland region within the province of Fars, and in this respect, it forms a useful comparison with the inland survey of Kerman. Unfortunately, the number of sites is rather low and the body of finds comparatively limited. The significant points to note are the high level of sites between the 3rd - 9th centuries, which is consistent with the knowledge that Fars acted as the dynastic centre of the Sasanian Empire. Again, in the later periods, from the 14th - 20th centuries, one also sees a high number of sites. What is perhaps surprising is the very low number of sites occurring between the 9th - 13th centuries. A drop between the 9th - 11th centuries is a pattern that has been repeated in other areas, but Region V is perhaps the only one within the whole survey that shows very low levels for the 11th - 13th century period, a time when the countryside was supposed to have been devastated by the Mongol invasions. Although the sample is limited, this pattern does not correspond with the fact that the nearby city of Istakhr reached the height of its prosperity during this period, which should have produced a rural settlement expansion, as is the case in the neighbouring Marv-Dasht region (Fig. 7).

Region Z - Bam/Rayen is the furthest inland section of the survey. Unfortunately, the sample is so limited that it would not be valid to base any real conclusions on the data. The general trend however is that of an increasing number of sites throughout the sequence, reaching its highest point from the 14th century onwards.

In the data presented above, the approach has been taken of looking only at the basic pattern of change in the number of sites between each of the periods that have been defined. While this offers a general perspective, it ignores the important factor of continuity of site occupation or locational reorganisation. This has proved to be a fundamental area of consideration in other archaeological settlement studies (*cf.* Adams, 1965). A more nuanced way in which to consider this same data is provided by the concept of 'new foundation settlements'. This is where the sites are counted in terms of 'old foundations' – sites with continuity of occupation across periods, 'abandoned sites' – sites where occupation ends all together and 'new foundations' – sites that are established for the first time in a new location. The data is presented using this concept below; in this case, abandonment or new occupations have been counted where gaps in a sites assemblage have been encountered (Fig. 21).

The main features to note below (Fig. 21) are the fact that Regions H, F and D and V all experience a very dramatic episode of site abandonment between the 9th - 11th centuries, with continuing low site numbers through the 11th - 13th centuries. A point that had not been noted before is the fact that Region V, representing inland Fars and the hinterland of the coastal Regions H, F and D, follows a very similar pattern to the coastal region in terms of the early part of the sequence. The main difference comes in the fact that Region V experiences a later revival in site numbers not found on the coast, perhaps due to the late historical resurgence brought about through the growth of Shiraz. The main difference between Region H, where the sample is strongest, and the surrounding regions is the fact that Region H experiences a much more stable pattern of growth up until the point of the collapse between the 9th - 11th centuries, whereas in the surrounding areas one sees dramatic increases in site numbers through the 3rd - 9th century period.

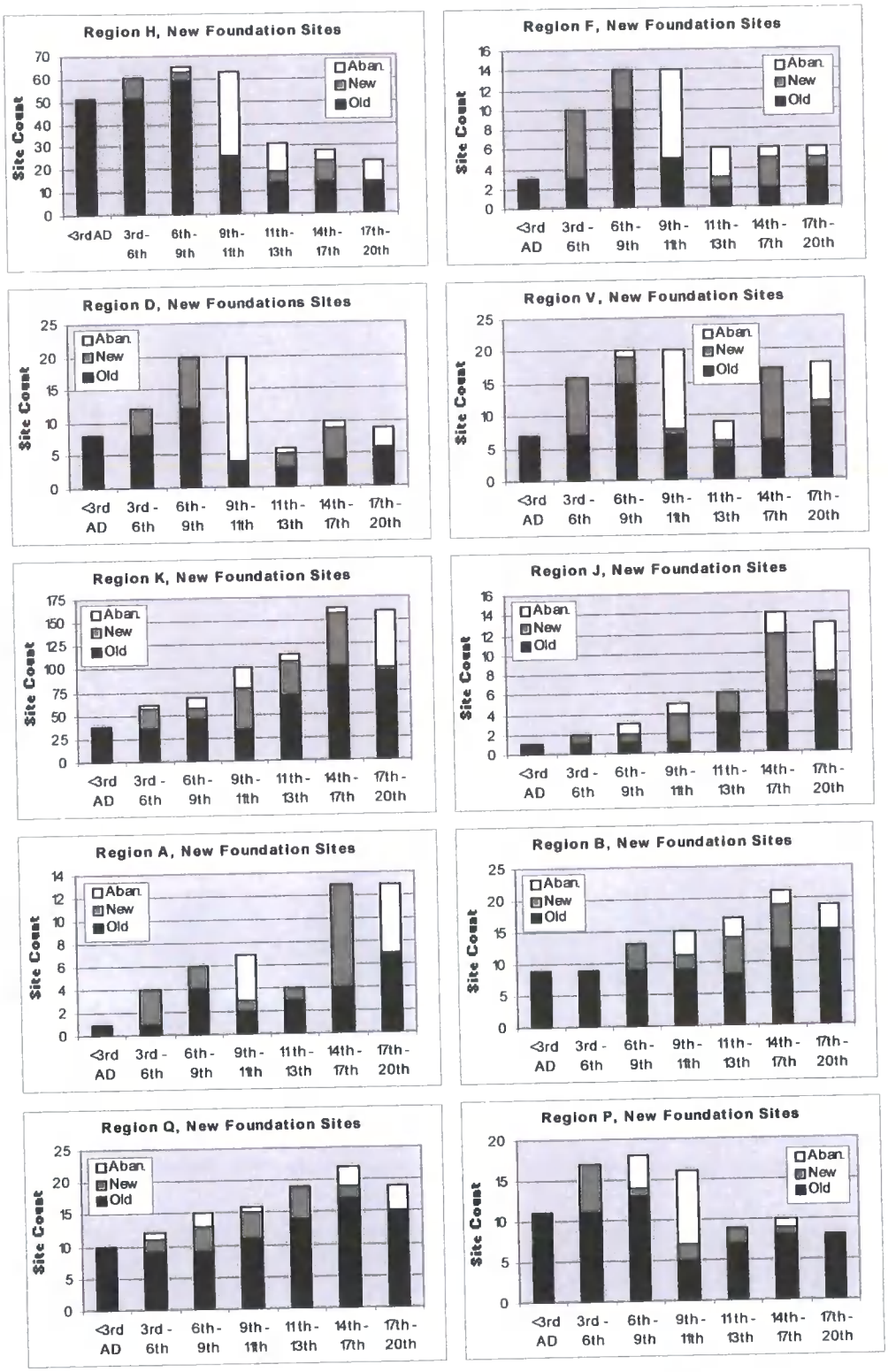

Fig. 21 *A selection of the most important regions presented in geographical order from west to east and inland, showing periods in which sites were abandoned, founded in new locations or continued to be occupied from the preceding period.*

A similar relationship appears in the eastern sector of the survey, although the chronological trajectory is reversed. In Region K, which has the largest sherd and site sample from anywhere in the survey, significant 'growth' occurs early between the 9th - 11th centuries, after which the rate of site growth is more continuous; particularly between the 11th - 17th centuries. In the neighbouring areas, Regions J and A, the climb between the same periods appears far more dramatic. Region B, to the west of this area was previously described as an anomaly. Here, one can see that it is unusual in maintaining a fairly constant background of settlement throughout the sequence, but that, in the later part at least, it essentially falls in with the 'Minab pattern'. In all four of the eastern coastal regions, K, J, A and B, the 9th - 11th century period appears to be associated with fairly significant changes, although of an entirely different sort to those encountered in the western area of the survey. Instead of the dramatic abandonment of sites, one finds that this is a period when a large number of sites fell out of use, while an even higher number were newly founded. While there are differences in the ratio of abandoned to new sites in Regions J, A and B, when one takes the small sample sizes for all of these areas into consideration and compares their patterns with that of Region K, where the data is more secure, then it becomes clear that the major episode of settlement relocation appears to be an essentially consistent trend across all of these areas.

Finally, turning to the two inland regions in Kerman, Q and P, it is interesting to note that although these areas are directly adjacent to one another, they follow completely opposite trajectories. Region P, the further inland of the two, follows a pattern not dissimilar to the western area of the survey, although events in these two zones are clearly unrelated. The fact that Region P appears to fall into decline after the Sasanian period is perhaps indicative of a fairly wide scale event. Region P is also particularly dramatically affected by the changes in site occupation seen in the 9th - 11th century period across the rest of the survey; an event that it apparently fails to fully recover from. Region Q, on the other hand, follows a very stable pattern of growth all the way through the sequence, and although it is at its highest level during the 14th - 17th centuries, when the surrounding coastal areas saw their most dramatic increase in new sites, Region Q had already hit a plateau in site numbers during the preceding period, although some later relocation of sites did also occur. The differences in settlement

pattern between Regions P and Q suggest that there may be further more refined regional sequences, particularly within the inland areas, that still remain to be defined.

Trends and Limitations

Throughout the discussion of changes in site frequency by Region and period, it has been tempting to directly equate such developments with changes in settlement. Such an assumption is dangerous. The data that the information is based on includes small samples of pottery collected from the surface of sites. At a number of levels there are problems regarding the extent to which this can be considered as representative of the pottery once in circulation, let alone of the period or nature of site occupation itself. In the first instance, there are numerous problems associated with the Collection. In the discussion of Williamson's survey methodology (Chapter 1), some of the variables affecting site location and finds recovery were considered, leading to the conclusion that the coverage of the area could not be considered a constant factor. In terms of the samples that were then selected, these are likely to have been influenced by aspects of site erosion and local geomorphology as well as by the nature of the structures that the material was associated with. Added to this are the choices that Williamson made regarding what aspects of the material were significant and which elements to retain.

Moving on to the formation of the Collection: it has been shown that the Collection was filtered at some stage. As far as possible, attempts have been made to understand or guess at what elements are likely to have been selected for shipment back to the UK, and to evaluate the significance of this in terms of the interpretations that one might hope to draw from the Collection data. Together, all of these factors mean that where one finds gaps in a site sequence or the termination or inception of occupation, these points are already heavily influenced by the availability and preservation of the data and its selection.

Regardless of the validity of the data selection process, there are still problems associated with making correlations between site numbers and processes such as changing population or settlement density. In order to infer these types of processes, it is necessary to take basic aspects such as site size and site morphology into consideration in order to differentiate between habituation remains and other types of 'off-site' features, or to distinguish between a small dispersed or large agglomerated

settlement patterns (Sbonias, 1999: 7-8; Wilkinson, 1999: 48-49). Obviously, with the type of data to hand, such considerations are not possible, and any attempt to estimate population or extent of settlement would be futile. Changes in site numbers do however provide a useful means of comparison between regions, and the temptation to draw some level of correlation between changes in site numbers and other associated developments related to the changing economic prosperity of an area does remain. Such factors include the growth or decline of a neighbouring urban centre, the improvement of agricultural productivity through the development of irrigation schemes or changes in farming regime, changes in land ownership or the devastation brought about by war, political disintegration or economic mismanagement. Implicit in all these explanations of a change in site pattern are ideas associated with population change or settlement reorientation. Bearing in mind the dangers associated with such interpretations based on basic site count data alone but considering the fact that significant changes in site number are likely to relate to important changes in the settlement at some level, it remains informative to note some of the patterns that emerge from the preceding analysis.

Probably one of the most striking features that emerges, and one that adds considerable credibility to the data as a whole, is the fact that the coastal regions surrounding Bushehr and the Minab plain provide very similar patterns in terms of the chronological distribution of site numbers to the two areas that were surveyed most intensively. What is even more striking is the fact that the western and eastern coastal zones follow two separate and completely opposing patterns in terms of a growth and decline in site numbers over the period represented. While a number of authors have suggested that there may have been distinct cultural zones within the Persian Gulf or across the region at different times (Haerinck, 1983: carte 1; Williamson, 1987: 14; Whitcomb, 1984: 331), this is perhaps the first indication of a major difference of economic trajectory between the Upper and Lower Persian Gulf, with effects that extend throughout the whole of the regional settlement pattern. The extent to which the inland regions were linked to this same overall pattern appears to vary more substantially between different areas, and may well be linked more intimately with local geographic factors. In the case of Fars province, there are some indications that the fortunes of the coastal and inland areas may have been closely linked during the Sasanian and Islamic periods. In Kerman,

the relationship is less evident except in the most closely linked valley system of Region Q. Further inland the fortunes of different areas appear to have diverged considerably.

A second general result of this analysis, although it appears partly to contradict the first, is that there is evidence of regional variability even within the two broad coastal zones that have been noted. This fact becomes especially apparent when one considers the more nuanced picture provided by the new foundation data. Although this is a situation that one would expect to find, it is informative to note that even within the areas that conform to a similar overall pattern, there are subtle differences that are suggestive of the way in which these different regions interacted with one another, and of the way that certain wider processes were received at the local level. One trend that was noted in both the western and eastern coastal areas was the fact that site growth towards the periods of high concentration were more pronounced in the neighbouring regions than in the two core areas of Bushehr and the Minab plain. Conceivably, this may have been due to the widening of an effect that first began within these two economic cores.

CHAPTER 4. CERAMIC DISTRIBUTIONS

In the following section, it will not be possible to present all of the results that could be derived from analysing different ceramic classes in the Williamson Collection. Having defined over two hundred and seventy classes and more than eighty different fabrics, with potentially many more sub-divisions and characterisations still not even recorded, there are clearly far too many different areas for possible consideration. Instead the aim here will be to pick up on selected topics that offer an insight into the potential of the Collection and which illuminate aspects that are of particular concern to our current interpretation of Sasanian and Islamic archaeology. This selection could have been made in many different ways. One of the aims has been to move beyond presenting individual ware distributions, towards introducing sets of classes that can be used to explore particular themes. These themes have been chosen on the premise that they encompass a suitable selection of the wares best represented in the Collection and those that Williamson paid attention to during the collection process. Two major themes will be dealt with: firstly, what can be termed simply as the 'Mesopotamian shift', involving the economic decline of Mesopotamia followed by a related shift in economic prosperity to Iran, and secondly, a consideration of the impact of trade from South and East Asia in the Persian Gulf and Iran.

4.1 THE 'MESOPOTAMIAN SHIFT'

In the previous chapter, information from survey projects distributed widely throughout different areas of the Persian Gulf region were introduced. One of the most striking remerging trends to be noted was the significant rise in the number of sites during the Sasanian period in both southern Iraq and Iran. Adams, in particular, went to considerable lengths to explain this change within the Diyala region of southern Iraq (Adams, 1965). Here, the Sasanian period was marked by increased levels of urbanisation and state managed agricultural development involving investment in large-scale irrigation schemes. These trends can be related to a much longer process of evolution related to state investment in irrigation that can be traced back to the beginning of statehood itself. It appears that this relationship received a new level of impetus under the Parthian administration, but that the process continued, reaching its

climax around the 6th - 7th centuries AD, just before the collapse of the Sasanian Empire (Adams, 1965: 63-66, 82). Evidence from historical tax records, the archaeological distribution of settlement and irrigation systems, and estimates of potential crop yields all combine to suggest that effective state management and investment in rural resources during the later Sasanian period produced massive returns in revenue, and this in turn created the conditions needed for general economic prosperity (Adams, 1965: 69-82). Some aspects of the chronology of the process may now be called into question. In particular, it seems untenable that the historical collapse of the Sasanian Empire was marked by a brief interlude of devastation, followed by a resumption of control under the Abbasids, followed by a second phase of decline (Adams, 1965: 84). While the rationale behind this hypothesis is clearly presented by Adams, it appears that the archaeological evidence that he based his conclusions on was flawed, given the fact that most of the Umayyad type fossils that he selected actually belong to the 9th - 10th centuries rather than the 7th - 8th (Adams, 1965: fig. 14 'Early Islamic Period' a-f). A more likely and plausible possibility is that the beginning of the Islamic period was marked by some of the structural changes that Adams identified within the administration and society, but that the recession itself generally began to set in as a single process from around the beginning of the 10th century.

The area that Adams based this model on was one that is geographically restricted and could in many ways be seen as unique, lying within the heartland of the Parthian, Sasanian and Abbasid Empires and directly adjacent to the successive capitals of Seleucia, Ctesiphon, Baghdad and Samarra. One of the characteristic features of the Sasanian Empire was the degree of uniformity witnessed in particular aspects across a broad geographic area. Large parts of Iran could equally be regarded as part of the heartland of the Empire, in particular the province of Fars, where the first capital was founded at Firuzabad, and later at Bishapur, and where the major seats of the royalty continued to be situated throughout the period (Huff, 1987: 302-04). At present, the archaeological characterisation of the different areas of the Sasanian Empire is still at an early stage. Already it is clear that a hierarchy exists between certain aspects, some of which display a high degree of centralisation and others greater regional diversity. Coinage and royal iconography (exemplified by silverware), for example, remained highly standardised across the empire, demonstrating the ability of the central administration to regulate the monetary economy and to influence tastes across a very

large area (Huff, 1987: 307; Harper & Meyers, 1981). Ceramics, on the other hand, are said to display a significant degree of local variation (Simpson, 1997: 74), reflecting the fact that pots never appear to have attained a significant status as a luxury commodity, and therefore reflect more closely localised product sourcing and goods distribution systems typical of more basic utilitarian products (Huff, 1987: 307).

Alkaline-Glazed Ware

These types of interpretation can be explored in more detail from the ceramic distribution evidence contained within the Williamson Collection. Of particular importance in this consideration is Alkaline-Glazed Ware (ALK.1-3), which is the main glazed ware represented during the Sasanian period. An extensive range of vessel forms are represented within the ALK class, and it has long been recognised that the only way to utilise the material for closer dating purposes is to identify particular variants based on vessel form and decoration, although glaze colour may be of some use as well. The latter criterion tends to present a particular problem, as the glaze is unstable and prone to degradation and colour leaching under most post-depositional conditions.

In an attempt to develop a comprehensive typology for the class, the evolution of vessel forms was traced through the sequence at Susa (Boucharlat, 1993: tables 4-6, 8). This work is not without problems; one and a half centuries of excavation at the site have led to uneven collection strategies and an overdue emphasis has tended to be placed on complete objects from funerary contexts, particularly for the Parthian period (Boucharlat, 1993: 43-44). Notwithstanding these inconsistencies, the sequence from Susa does provide some outline, although this can still only be related fairly broadly to datable stratigraphic units, and even then, one of the main conclusions of the work has been the discovery that many of the forms endure with only minor changes through much of the sequence (Boucharlat, 1993: 47). Clearly not all vessel forms will be amenable to closer dating.

From the Williamson Collection assemblage of 654 ALK sherds, 33 forms have been distinguished. A number of these forms are also associated with consistent types of glazing. Of these, only a relatively small number can be more narrowly dated from excavated parallels, although in general it appears that Williamson succeeded in selecting out some of the more obvious pre-Sasanian types. Some of the Williamson

Collection ALK sub-classes and forms can be paralleled in the material from Kush. At Kush, five glaze/body variants were recognised (TURQ.1-5) and six of the most common forms were described and illustrated, all of which find close parallels in the Williamson Collection, although among these Type 25 is perhaps too generalised to be regarded as truly diagnostic (Kennet, 2004: fig. 5, table 16). In addition, one of the major glaze/body variants, TURQ.5, is represented in the Williamson Collection as type ALK: 33 within the sub-class ALK.3. This is one of the best known and widely distributed types referred to elsewhere as Sasanian-Islamic ware, 'barbotine' decorated jars, or 'Hibs' Ware (Glover, 2002: 166). New excavations within the region are beginning to isolate further diagnostic forms[15], and before long it should be possible to reliably date many of the forms represented in the Collection. Despite these advances, there are still many more sherds belonging to the undated ALK.1 sub-class than there are to the more closely defined ALK.2 and ALK.3 groups. This, combined with the fact that the proportion of forms assigned to each of the sub-classes is arbitrary, makes it difficult to compare the distribution of ALK related to different periods, and the most successful analysis is still based on the ALK assemblage as a whole.

Before turning to the presentation of the data, it is important to consider the information on where ALK was produced. Almost all of the material, regardless of form, displays a similar type of light cream coloured fabric with some coarse inclusions. In general, the overall uniformity of the fabric strongly suggests that the majority of the class was produced within the same or a similar area. Various types of analysis on the material by different researchers has suggested a production source within southern Iraq (Whitehouse, 1979: 49). More recent petrographic analysis, based on 18 samples of ALK from Siraf, produced seven different petrofabrics, all with a similar mineral suite, but with varying proportions of the constituent elements (Mason & Keall, 1991: 57, 61, table 1). A comparison of these groups with a sample derived from a general collection of wasters and kiln furniture, said to be from the area of Basra, indicated that only one of the petrofabrics was very similar, although all are reasonably closely related and thought to derive from sources within the Basra region of southern Iraq. These same conclusions, reached over twenty years before, led the author at that time to infer that

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[15] Information derived from a paper by Prof. Tatsuo and Dr Hanae Sasake, entitled: 'Sasanian-Islamic pottery from Hulayla, Ras al-Khaimah (UAE)', delivered at the Workshop on Partho-Sasanian and Early Islamic Pottery at the British Museum (Dept. ANE), 16th July 2003, organised by St John Simpson & Seth Priestman.

Siraf's status as a "leading entrepôt" enabled the site to act as "a busy participant in the maritime trade with Iraq" (Whitehouse, 1979: 47, 56), based on the numerous finds of ALK sherds at the site. Of course these comments were made in the context of Siraf's exceptional early engagement in maritime trade contacts with East Asia, and were merely intended to add to the impression of the site's cosmopolitan status in the 8th century. What should become clear below, however, is that its connection to Iraq at least, was not so very exceptional.

Distribution of Alkaline-Glazed Ware in Iran

Sherds of ALK represented in the Williamson Collection were recovered from as many as 130 different sites distributed widely across the survey area. While little is known about the character of individual locations, it is clear that not all of these were major centres of importance. An estimate based on the site periodisation employed in the previous chapter[16], indicates that there are 336 sites within the survey that can be dated to the pre-3rd - 11th centuries, which represents the outside ranges for the circulation of ALK in the Collection. Of these, 39% have ALK present in their assemblages, which suggests that ALK was a reasonably common class at this time. This argument is of course partly negated by the fact that the site count for this period is based in part on the dating provided by the presence of ALK in the first place. At the same time, sites of this period are dated by a number of other type fossils and there are few sites where ALK represents the only datable element in the assemblage[17].

Turning to the distribution of the class, a basic plot of all sites that have produced ALK sherds shows that the material is distributed fairly evenly throughout the survey area, including findspots located at considerable distances inland (Fig. 22). From this, one can infer that the ALK does not have a restricted coastal distribution. What the distribution map does not show, however, is that the proportion of sites with ALK varies considerably between different regions of the survey (Fig. 23).

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[16] The same system is repeated during the rest of the analysis presented below.

[17] This is a problem that recurs repeatedly in the following analysis.

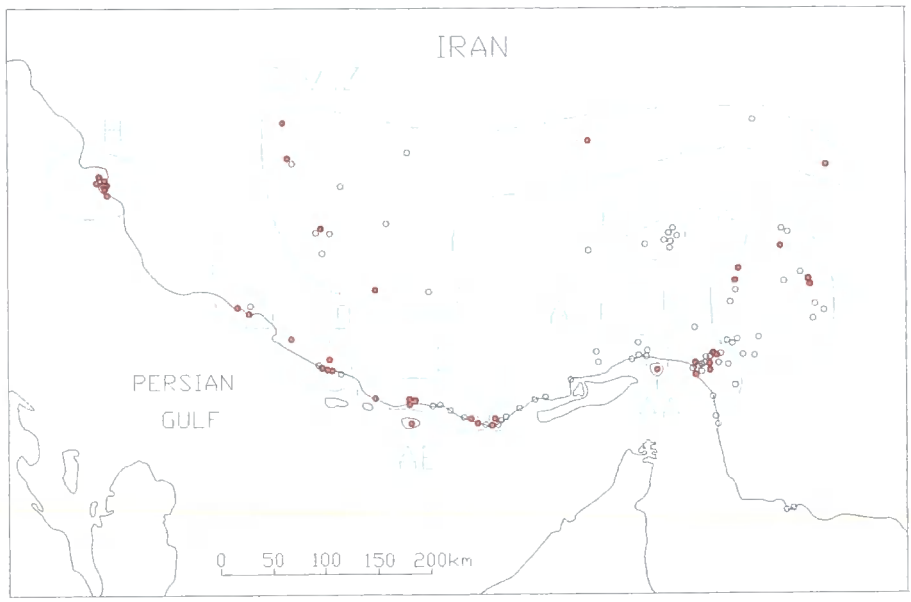

Fig. 22 *Sites marked in red are those that have been securely located that have ALK in their assemblages. Regions outlined and labelled are referred to below in* Fig. 23.

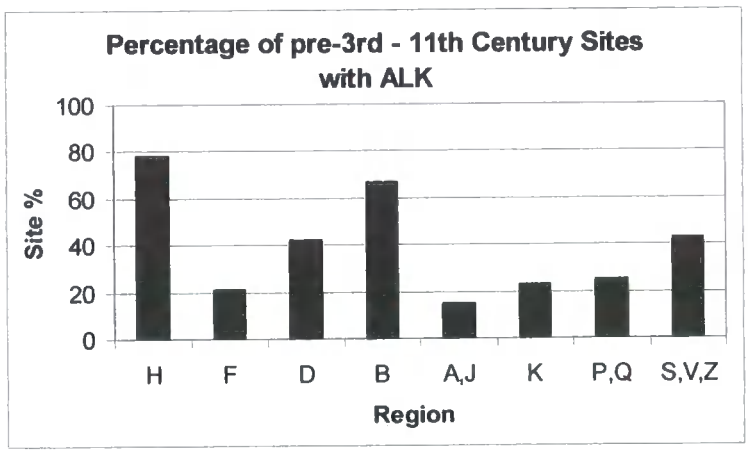

Fig. 23 *Percentage of sites dated to between pre-3rd - 11th centuries with ALK sherds for each Region. Note that Regions L and R have no ALK sherds and that Regions AA and AE have been omitted because the site sample is too small. Areas that have been amalgamated provided similar results and are situated adjacent to one another, see* Fig. 22 *above.*

The problem outlined for the percentage of ALK on pre-3rd - 11th century sites above applies equally to the data presented in Fig. 23, and as a result it is necessary to be cautious of the circularity surrounding any argument based on these figures. Bearing this in mind, a number of striking trends remain. Most significant is the dramatic difference in the proportion of sites with ALK pottery in Regions H and K. Taken together with the information on settlement in these two areas, presented in the previous chapter, it appears that Region K along with the neighbouring areas in the Lower Persian Gulf (Regions A, J and L), were yet to develop as major recipients of imported

pottery from southern Iraq in this period. Region H by contrast, was dominated by the major Sasanian entrepôt of Rishahr, which must have acted as a primary point of transhipment for goods being moved to or from southern Iraq. It is perhaps unsurprising then to find that Region H registers as having the highest percentage of sites with pottery from southern Iraq within the survey area. In addition to the figures for Region H, one can see that the high percentage for that area is roughly echoed in the neighbouring regions of B and D, suggesting that ALK was readily available to coastal sites away from the main centre but still within what can be considered as the Upper Persian Gulf area. The anomaly here is Region F, which can only really be explained by some inconsistency in the data.

Apart from the recurring Upper/Lower Persian Gulf contrast, one of the most surprising results to emerge from Fig. 23 is the high percentage of sites with ALK from inland areas. Regions P and Q have an almost equal proportion of sites with ALK to those areas situated along their neighbouring coast lines and further inland, in the rather ill defined zone of Regions S, V and Z which occupy the most inland areas of Fars and Kerman covered by the survey, over 40% of the pre-3rd - 11th century sites have produced finds of ALK imported all of the way from southern Iraq. This result seems to directly contradict the assertion that ALK was rare on the Persian plateau (Huff, 1987: 307; Williamson, 1971c: 4). One point that may temper all of these results is the fact that the group, as it has been defined here, is broad and potentially covers a period representing as many as eleven centuries. With further work this situation could be improved, though the fact that some attempt to filter pre-Sasanian forms has already been made, and the fact that some of the pre-3rd century sites included in the equation only have earlier prehistoric pottery, does begin to balance in favour of the main conclusion. How this apparent bulk export of pottery from southern Iraq occurred is not easy to explain. Looking at the proportion of ALK in the quantified sequence from Kush, the class makes up over 13% of the entire 4th/5th - 6th century glazed ware assemblage, a proportion of glazed wares itself far higher than any subsequent period (Kennet, 2004: fig. 6). These conclusions suggest that during the Sasanian period southern Iraq was extremely active in supplying a staple commodity to a very wide area, although the results from the Williamson Collection indicate that this supply was not distributed evenly.

Distribution of Honeycomb and Torpedo Jars

Turning to another aspect of the ceramic assemblage thought to originate in southern Iraq, one can witness another type of distribution pattern. Two types of large transport amphorae can be considered: Torpedo (TORP) and Honeycomb (HONEY). The dating of these two classes is not particularly well defined. TORP jars may have remained in circulation from Parthian through to Abbasid times, but appear to have been most common between the c.3rd - 6th centuries from the excavated contexts where they occur (Kennet, 2004: 63). HONEY jars have not been found in many excavated contexts so far, but the growing weight of evidence suggests that they appeared later than TORP, between the c.7th - 9th centuries (Kennet, 2004: 59). It is generally accepted that both classes were manufactured in southern Iraq, partly because of their common occurrence in that region, although conclusive petrographic work on these classes is still awaited. The hypothesis is also supported by the appearance of the fabrics, which are closely related to one another and appear entirely different to the Coarse Ware products of southern Iran.

Close examination of the fabrics in the Williamson Collection indicated that there are four variants within the TORP class, some of which corresponded with particular vessel forms. One of the sub-classes (TORP.3) finds close parallels with a sample sherd from 7th century levels at Sir Bani Yas in Abu Dhabi, and a second sub-class (TORP.2) can be paralleled with a TORP sample from Kush in Ras al-Khiamah[18]. These parallels with pottery from the opposite shore of the Persian Gulf suggest that there may have been a limited number of major production centres for TORP jars, each producing a substantial distribution. HONEY jars, on the other hand, mostly appear to have been manufactured at a single centre, although petrographic analysis would be needed in order to confirm this.

As well as occupying different chronological ranges, TORP and HONEY jars almost certainly performed different functions. The former have a tall-elongated form with a narrow neck and a pointed base, similar to a Roman amphora, and are usually found with a thick coating of bitumen on the inside. HONEY jars on the other hand are

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[18] Personal observation derived from direct visual comparison of sherd K6289/1150 from Kush and sherd SYB91 127 from Sir Bani Yas. I would like to express my gratitude to Dr. Derek Kennet and Dr. Joseph Elders for making these samples available.

generally globular, with broad rounded bases, defined necks and wider mouths. Both types of vessel would have been used for the transportation of bulk commodities such as wine, oil or other liquid produce, principally via waterborne transport, though the difference in form between the two classes suggests that they may have contained substances with different dynamic properties. Whatever their precise contents, both vessel categories would have been linked to the maritime distribution of bulk commodities, probably from their place of production in southern Iraq, to other areas predominantly within the Persian Gulf. The sample of both classes in the Williamson Collection is fairly limited, with 93 TORP sherds and 35 HONEY sherds. Both classes were recovered from 12 different sites, one of which they share in common. This sample can be augmented slightly by the inclusion of a group of vessels found on two of the TORP sub-fabrics, but with an alternative range of vessel forms including bowls. The Torpedo related class (TRC) represents an additional 21 sherds. Combined, all three groups were recovered from a total of 30 different sites.

Given the presumed function of these vessels, it is no surprise to find that just 2.4% of the combined assemblage of 130 sherds, were recovered from inland locations. A more detailed picture of how these different groups are distributed is provided by looking at the percentage of HONEY and TORP, and HONEY, TORP and TRC combined, on sites dating between the 3rd - 9th centuries (Fig. 24); a range which should cover the full chronological span of respective classes in most cases.

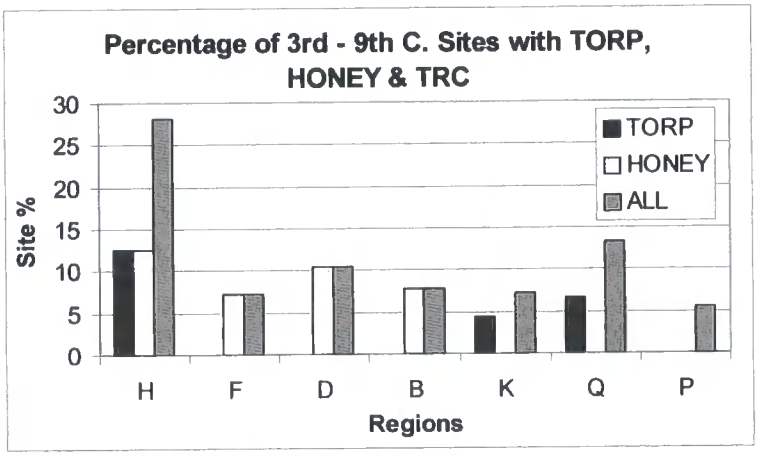

Fig. 24 *Percentage of 3rd - 9th century sites by Region with HONEY, TORP and TRC.*

The first point to note in Fig. 24 is that the earlier dated TORP seems to be more geographically dispersed with a distribution that includes a small number of sites in the Minab plain and its hinterland, as well as on a higher proportion of sites on the Bushehr peninsula. In contrast, HONEY was found in few of the same areas, and was only picked up at sites in the Upper Persian Gulf region, although it is known to occur on sites in the Lower Persian Gulf as well. Within the Upper Persian Gulf, HONEY appears to have been more uniformly distributed in areas outside of Bushehr than TORP, although none was recovered from al-Qusur in Kuwait (Kennet, 1991). One of the features of both classes distribution is the fact that they occur on a low proportion of sites overall, (between 5-10%), apart from at Bushehr, where they appear to have been slightly more common. The disparity between the occurrence of these classes at Bushehr and in other areas is further accentuated when looking at the combined figures of all of the classes. Here it must be noted that the high proportion of sites registering in Region Q is misleading, and can be attributed principally to the low number of 3rd - 9th century sites in the area.

The distribution of HONEY and TORP in the Williamson Collection has been interpreted here as relating directly to the bulk export of foodstuffs from southern Iraq to ports along the northern shore of the Persian Gulf, although this remains conjecture without a study of the vessels original contents. If the interpretation is correct, however, then the widespread distribution of these classes attests to a thriving network of maritime trade emanating from Iraq between the Parthian and Abbasid periods. As such, the increased occurrence of these classes at the major entrepôt of Bushehr peninsula is to be expected. This pattern accords with the information derived from the distribution of ALK that was also manufactured in southern Iraq. At the same time, there are fundamental contrasts in the distribution patterns of ALK and the storage jar classes, with the latter displaying a distinct coastal orientation and some changes in the distribution pattern between Sasanian and late Sasanian/Early Islamic times. These differences primarily reflect functional contrasts in the pottery, but also provide illustration of different aspects of the distribution network during the period.

Systemic Change

An understanding of the development of late Sasanian/Early Islamic ceramics has been gradually improving over many decades, although certain historical assumptions may

have hindered this understanding. One point that has become increasingly clear is that the initial spread of Islam under the Umayyads does not appear to have been marked by substantial changes in the ceramic record, except perhaps for an increased quantity of trade ceramics from East Asia at major seaports such as Siraf (Whitehouse, 1968: 17-18). There was also perhaps a trend towards the dissemination of Islamic wares to new regions in the Indian Ocean, particularly in the form of appliqué decorated ALK (Glover, 2002), though most of these may in fact belong to the period that follows. Very dramatic change did come about slightly later, roughly one and half centuries after the spread of Islam, from the beginning of or during the Abbasid period. In ceramic terms, the Abbasid period was marked by a raft of radical technological innovations involving significant elaboration of glazing and decoration, coupled with a more precise control of body and firing. These developments herald a fundamental change in the conception of the ceramic medium, from one of primarily utilitarian function, to a place amongst the decorative arts alongside glass, metalwork and textiles. The relative value of these commodities presents a complex subject in its own right, and the value of ceramics is never likely to have been particularly high, even for the most elaborately decorated piece. Never the less it seems reasonable to regard this transition as a significant stage within the history of ceramic development. Certainly, the pottery of the Abbasid period presents an obvious contrast to anything that came before.

The development of ceramics at this time has been discussed at length, and the range of opinion regarding the stimuli for the changes is broad (e.g. Whitehouse, 1979; Tampoe, 1989: 87-95; Northedge & Kennet, 1994; Northedge, 1996; Hill, Speakman & Glascock, 2004). Of central importance it seems, was the transferral of the seat of the Caliphate from Syria to Iraq. Although this event was probably stimulated by the economic strength of southern Iraq in the first place, it undoubtedly brought with it a fresh impetus to the region, particularly, in this context, in relation to luxury consumption. The influence of East Asian pottery on local ceramic traditions also clearly had some influence, as can be seen in the close parallels between TIN.W1 with internal ribs from southern Iraq and WWSL from southern China, or the virtually indistinguishable SPL.GW and GWSG produced in both regions (Mikami, 1968). What this cross-pollination actually signifies is difficult to assess, as it depends in the first instance on a precise interpretation of the chronology (Whitehouse, 1979: 46-47) and in the second on a set of enigmatic relationships, particularly when one takes into account

the fact that some of the most important export wares from the East Asia were themselves developed in anticipation of the tastes in Western markets (Guy, 2001-02: 13-14). Adams may have successfully identified at least one of the basic underlying causes of the Abbasid developments when he argued that a sea-change had occurred in the way that power structures were maintained. The Sasanian Empire appears to have been an "agrarian-based civilisation" with a powerful centralised administration. In contrast, the Abbasid administration was susceptible to factionalism and political rivalry, in which the consumption of finery formed an integral part of court life and the self-aggrandisement of individuals competing with one another for positions of status and authority (Adams, 1965: 85-99). The eagerness of Adams to highlight the excesses of the Islamic institution compared to the 'business-oriented' Sasanians, (who in fact equally relied on the self-aggrandisement of individuals), does raise the suspicion that his argument may have been influenced to some extent by the modern agenda of Anglo-American foreign policy in the region, though this is merely a point of conjecture.

The Samarra Horizon

Whatever the explanation for the changes that took place during the Abbasid period, it is clear that they coincide with the development of a new chapter in ceramic history, and that the centre of these developments was situated in southern Iraq where the seat of the Caliphate lay. One of the important areas that archaeology has contributed to the understanding of these changes is to dispel the concept of a narrow 9th century horizon for these innovations. Stratigraphically controlled excavation at Siraf, amongst other places, have shown that the various ceramic innovations were introduced in sequence over at least one and a half centuries, not altogether as one single revolutionary process, as was originally believed, based on the royal foundation and occupancy of the type-site of Samarra (Whitehouse, 1979: 54, 56). Subsequent work on the 'Samarra horizon' wares have produced further debate on the dating of specific classes and the order in which they were introduced (Tampoe, 1989; Kennet & Northedge, 1994; Northedge, 1996); although essentially, the important aspects of the framework laid out by Whitehouse based on the Siraf assemblage should still stand.

Abbasid Export

While considerable energy continues to be spent on the precise dating and sequence of ceramic developments associated with the Abbasid period, less consideration has been

given to the wider impact of these events. One aspect that is becoming increasingly clear is that pottery manufactured in southern Iraq during the Abbasid era was disseminated widely. As has already been seen, this was not a new feature. Large volumes of pottery manufactured in southern Iraq during the Sasanian period, in the form of ALK and storage jars, reached destinations throughout the Persian Gulf and beyond as well as settlements deep within the interior of Iran. Whether the complexion of the trade that bore these vessels, or whether the vessels and their contents changed during the Abbasid period, is difficult to assess without more systematic research being undertaken. There are certainly indications that Abbasid wares reached new destinations. In East Africa four sizable coastal trading sites, received their earliest imported pottery from the Persian Gulf in the form of Samarra horizon wares. At Shanga and Manda, in the Lamu archipelago off the coast of Kenya, sherds of appliqué decorated ALK, TIN.W1 and TIN.TBS were recovered in large quantities (Horton, 1996: 274-77; Chittick, 1984: 66). Further south at Kilwa, off the coast of Tanzania, these wares appeared in smaller quantities (Chittick, 1974: 303), and during the survey of the manda of Andaro in southern Madagascar, a single sherd of possible TIN.W1 has been noted (Priestman, In Press), with further possible examples being observed at other manda enclosures[19] within the area of the survey (Parker-Pearson, Godden, Heurtebize, Radimilahy, Ramilisonina, Retsihisatse, Schwenninger & Smith, In Press).

Further finds of Iraqi Plain and Splashed Opaque Glazed Ware and late ALK have also recently emerged from early levels excavated at the port sites of Sharma (Rougeulle, 2005: 226-27) and al-Shihr, in the Hadramawt region on the south coast of Yemen[20]. To the east of the Persian Gulf, an increasing number of sites in Pakistan, India, Southeast Asia and East Asia are producing small assemblages of ALK and other Samarra horizon wares, of which Opaque Glazed Wares appear to be the next most common element after appliqué decorated ALK jars (Glover, 2002). Although ALK tends to be the class that occurs most frequently, at Ko Kho Khao and Laem Pho, two major trading ports in

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[19] Manda enclosures are a particular type of structure found in the region, often situated close to the coast or at the junction of major river deltas and always at points that provide access through the mangrove swamp to the interior.

[20] Information on Sharma also derived from the paper delivered by Axelle Rougeulle entitled: 'The Sharma horizon: Sgraffiato wares and other glazed ceramics of the Indian Ocean trade ca 980-1150' and information on al-Shihr from Claire Hardy-Guilbert's paper entitled: 'Archaeological research at al-Shihr, the Islamic port of Hadramawt, Yemen (1996-2002)' both delivered at the Seminar for Arabian Studies, the British Museum, London, 23rd July 2004.

Vietnam, Opaque Glazed Wares represent the most numerous Islamic class (Glover, 2002: 166), suggesting that more refined aspects of this export remain to be defined. In general, this expansion of the geographic sphere of exported pottery manufactured in southern Iraq may have been linked to a growth in trading activity during the period, in particular the role of Arab merchants (Chaudhuri, 1984: 37, 39). Equally, it may be seen as connected to the commodification of pottery itself. Certainly there appears to have been a major drive emanating from East Asian markets, with one of the early 'commodity wares' of South China, Changsha ware which was manufactured in the province of Hunan, being exported in bulk to the Western Indian Ocean (Guy, 2001-02) even before the advent of the Samarra horizon (Whitehouse, 1979: 51-52). While issues related to trade from the East will be dealt with in the following section, it is relevant to note that the import assemblages at most of the known sites receiving Samarra horizon wares to the east of India, are actually dominated by T'ang wares from the southern China (Glover, 2002: 167). This situation is reversed at Mantai in Sri Lanka (Glover, 2002: 169), perhaps marking the rough point of watershed between the areas in which Islamic and East Asian wares dominated as export wares within the Indian Ocean during the Samarra horizon period.

The Samarra Horizon in Iran

Turning to the situation in southern Iran and the north shores of the Persian Gulf, it is clear from the excavations at Siraf that the full range of ceramic innovations made in southern Iraq were received at this entrepôt, and were received in what appear to be substantial quantities. What influence these innovations had on the region as a whole is a question that can only be answered through survey and excavation. Within the Williamson Collection, the assemblage of Samarra horizon wares is rather limited. In total, 427 sherds have been recorded, belonging to the various associated classes. The limited size of this assemblage corresponds with a small site sample for the 9th - 11th century period, noted in the previous chapter. These trends may be linked to processes that were identified during intensive survey in the region of Ras al-Khaimah. There, radical changes occurred in the nature and orientation of settlement during this period, with a reorientation towards the coast and an increase in the nomadic sectors of the population. At the same time, fine ceramic imports continued to be received from southern Iraq (Kennet, 2002: 160). The occurrence of such changes over a much broader area is partially suggested by the high levels of site abandonment and new

foundation witnessed across the survey as discussed in the previous chapter (p.100-01, Fig. 21).

A further point that should be noted regarding the Samarra horizon assemblage is that not all of the sherds come from vessels manufactured in Iraq; some belong to replica industries situated more locally in Iran. The differentiation of Iranian and Iraqi products is a point of some importance in the present discussion. Petrographic analysis of Opaque Glazed Wares and Clear Splashed Glazed Wares has been carried out on samples from Siraf, and these have been compared with the analysis of waster material believed to be from the area around Basra (Mason & Keall, 1991). What the results of this analysis have shown is that all except one of the Opaque Glazed Wares sampled (including Plain, Splashed and Lustre Painted Ware) were manufactured on the same petrofabric as the Basra sample (Mason & Keall, 1991: 61). The Splashed Glazed Wares produced a more complex picture, with nine different petrofabrics emerging. One of these belonged to the East Asian 'three coloured ware' (GWSG). Of the remaining eight, three appeared to be derived from Iraqi sources, while five represented different petrofabrics from Iran, one of which came from Siraf itself (Mason & Keall, 1991: 62-3).

While further analysis is clearly needed to unravel the full complexities of the origins of the common glazed classes, these results accord with observations derived from this study of the Williamson Collection. All of the early Opaque Glazed Wares have a very fine-grained homogeneous cream coloured fabric. What appear to be slightly later, much cruder productions of Opaque Glazed Ware on a coarse pink coloured fabric (TIN.W2), has been recovered principally from the area of Sirjan, where it is likely to have been manufactured (Williamson, 1987: 15). A similar division of the Clear Splashed Glazed Wares (SPL.GW & SPL.P) and early Sgraffiatos (GRAF.EP) have also been noted, with one group on a fine cream coloured fabric, and a second on a coarser pink coloured fabric. In the case of Sgraffiatos, the former group are generally unslipped with the Sgraffiato carved into the body, causing the glaze to puddle and darken thus highlighting the decoration. On the latter group, the vessels have a white slip, with the Sgraffiato simply carved through to reveal the darker body below. While this division of cream and orange bodies may seem rather crude, it does not appear to be contradicted by the available evidence, and in fact the cream coloured 'Iraqi' body is

paralleled closely by the tempered version found on ALK manufactured in the same region. Of course, the distribution of the 'Iraqi body' may not be restricted to Iraq itself, and may well include the same broad alluvial belt encompassed by the Khuzistani region of southwest Iran.

The combination of all of the Samarra horizon classes (Opaque Glazed Wares, Splashed Glazed Wares and early Sgraffiato of both body types), were recovered from 60 different sites spread widely across the survey (Fig. 25).

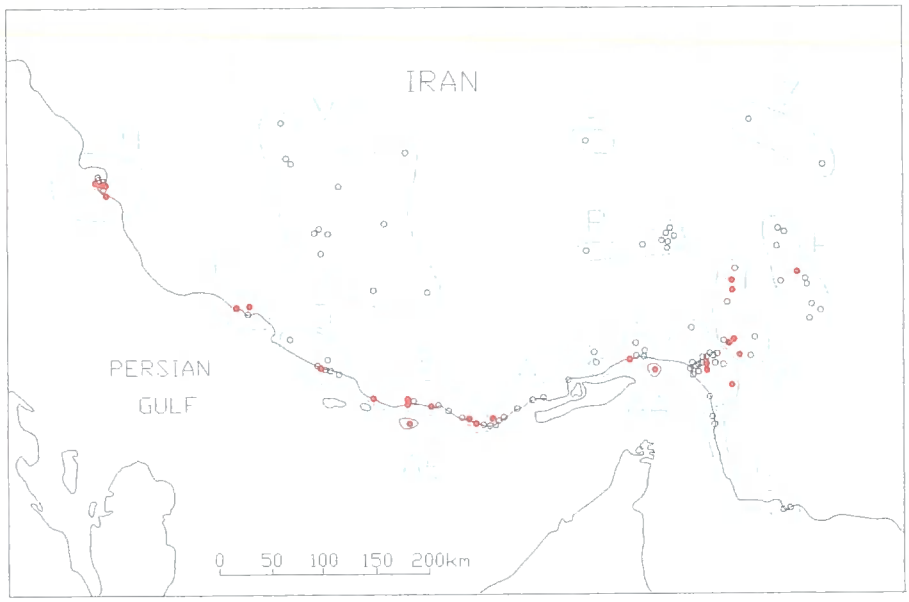

Fig. 25 *Sites marked in red are those that have produced finds of 9th - 10th century 'Samarra horizon' wares. Regions outlined and labelled are referred to below.*

As with the ALK, the distribution map does not provide the full picture. A more informative way to explore the data is provided by plotting the number of sites by Region (Fig. 26). It should be noted that only those Regions with five or more 9th - 11th century sites have been included, thus excluding Regions AA, AE, A, D, J and Z. Regions R and L have also been omitted as they have not produced any Samarra horizon finds. Below, the material has also been divided according to the chronological dimension suggested by the Siraf sequence and other excavations (Fig. 26). Potentially several phases could be differentiated, but for the purposes of this analysis an early and a late grouping is sufficient. Early Samarra horizon wares include TIN.W1, TIN.TBS and TIN.CT; all variants of Opaque Glazed Ware on the fine cream coloured body. The second later group is made up of TIN.ML, TIN.PL, SPL.P, SPL.GW and GRAF.EP.

Both of the opaque glazed groups with over-painted lustre have the fine cream coloured fabric while the Splashed Glazed Ware and early Sgraffiato are represented on both bodies although the crude pink variant is more common.

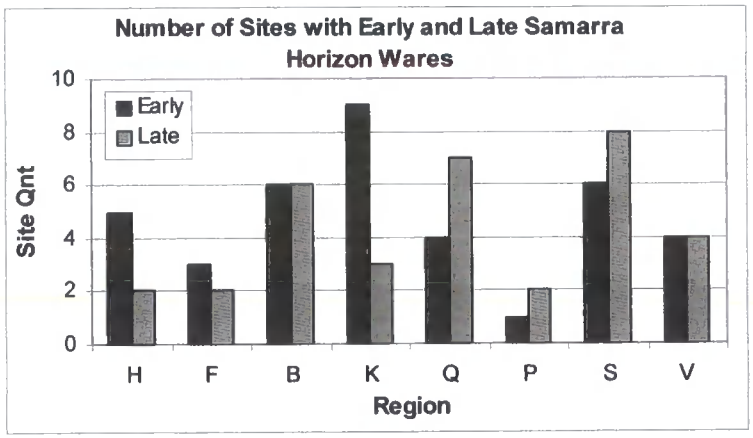

Fig. 26 *Number of sites by region with early and late Samarra horizon wares.*

A point that is immediately apparent in Fig. 26 is the fact that the number of sites in question, once divided into the respective groups, is very low; less then ten sites for each of the Regions considered, and this is only covers those Regions with the largest samples. Below, the same data is presented with the total number of sites that produced early and late Samarra horizon wares, expressed as a percentage of the total number of 9^{th} - 11^{th} century sites represented in the survey (Fig. 27).

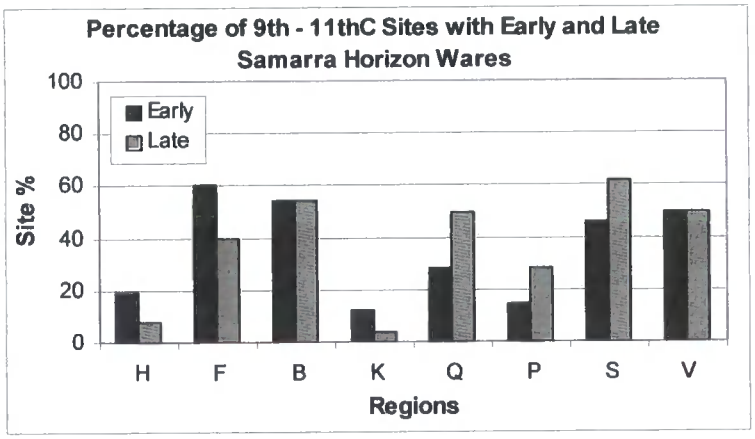

Fig. 27 *Percentage of 9^{th} - 11^{th} sites with early and late Samarra horizon wares for all areas with five or more sites of this period.*

The main difference suggested by the figures presented as a percentage (Fig. 27) is that for the two areas with the highest site counts, Regions H and K, the percentage of sites

with both early and late Samarra horizon wares is particularly low. Whether this is a feature particular to these regions is difficult to determine. Perhaps if survey of the same intensity was extended to the other areas, then levels below 20% would be shown to be a more accurate figure overall. More generally, the results derived from the two sets of figures are similar. The most important trend to be noted is that there is a slight reduction in the number of sites producing later Samarra horizon wares in most of the coastal regions, except for Region B where the level remains the same. Conversely, most of the inland regions see a slight increase in the number of sites producing finds of later Samarra horizon wares, except for Region V, where the level also remains the same. Because of the small number of sites that these figures are based on, it is impossible to draw any secure conclusions. It is interesting to note that the earlier groups, which were all derived from Iraq, appear to be more of a coastal phenomenon, whereas the later groups, on both bodies, started to become represented more widely in inland areas, as the spread of these new traditions started to take root and be manufactured within Iran itself. As has been stressed, this can only be a very tentative conclusion, and the most important aspect of the data to the current discussion is the fact that the Samarra horizon traditions emanating from Iraq, were, like the ALK, represented on a high proportion of Iranian sites; both along the coast and deep within the interior of the country.

Glaze Wares of the 11th - 13th Centuries

During the post-Samarran period, there is clear evidence for what were Iraqi ceramic innovations being incorporated into local ceramic production traditions in Iran, particularly in the form of Sgraffiatos. Whitehouse considers this phenomenon in relation to Style III Hatched Sgraffiato produced from the mid 11th century, with its fusion of Samarran decorative techniques to forms and glaze paralleled on the Slip Painted Ware tradition of northeast Iran, Afghanistan and Central Asia (Whitehouse, 1979: 58). Sirjan, which flourished as the main regional centre of Kerman province between the 9th - 11th centuries, may have been particularly influential in this amalgamation of traditions (Williamson, 1972a: 27). Excavations in the potters' quarter revealed large quantities of SPW, SPL.GW, SPL.P and GRAF.EP, all, as Whitehouse pointed out, on the same fabric and with a similar and often directly overlapping range of forms (Morgan & Leatherby, 1987: 53, figs. 1-31). Added to this repertoire, one finds TIN.W2, which was also found as wasters in the potters' quarter (Williamson, 1987:

16). Although no kilns were excavated, this convergence of traditions at Sirjan is well illustrated, not least by the example noted in Chapter 2 of the three classes, SPW.YB, TIN.W1 and MONO.G all being manufactured on the same fabric and with the same form.

Sirjan was not the only centre for Sgraffiato production in southern Iran. From the 11th century, sites producing this ware appear to have become increasingly common (see below). At the same time, one can see modifications to the industry. Apart from the forms that have already been noted, later Sgraffiato tended to have thicker walls, glaze covering the interior and upper rim exterior only, and rather crude quickly executed decoration. In addition, the complex polychrome splashed glaze, common on GRAF.EP, came to be replaced by the more formal and simplified repertoire of green, brown and sometimes yellow or purple splashing found on GRAF.H and GRAF.LP. Monochrome glazed wares with and without Sgraffiato in bright green or yellow (MONO.G, MONO.Y, GRAF.G, GRAF.Y, GRAF.M) also became increasingly common, until these versions eventually came to dominate the tradition during the 12th - 13th centuries (Kennet, 2004: table 3; Horton, 1996: table 14). These developments have been linked to the increased commercialisation of the industry in southern Iran, and all of these modifications can plausibly be linked to efforts to decrease the cost of production and increase the resilience and thus portability of the product (Kennet, 2004: 75).

There is already evidence of different production centres in the region. Sirjan has already been noted. Although the evidence from Siraf has never been presented in full, excavations at Site D, the industrial quarter to the north of the city, revealed a 45m x 42m block occupied by a pottery workshop with at least thirty kilns, some of which were stratigraphically superimposed, indicating that the area was in use for some time (Whitehouse, 1968: 12-14; 1971: 12-15). A number of kiln types were represented, with the most common being a basic two chamber up-draft kiln, similar to the 3rd/4th century example from Tal-i Malyan in the Marv-Dasht area[21], which probably produced a range

[21] The kiln at Tal-i Malyan has been interpreted as a 'down-draft' kiln, based on the fact the chimney draws from the floor level of the firing chamber (Alden, 1978: 82, fig. 4), and the fact that Wulff describes a similar design as being a 'down draft' kiln (Wulff, 1966: 160). In fact, the most important aspect of a down-draft kiln is that the flames are drawn down through the base of the fire box, up over a bag-wall, through the firing chamber and back down to the exhaust flue which leads into the chimney at floor level. This sophistication represents the basis of high-firing technology, which eluded those outside East Asia until the 15th century, when it was first successfully replicated in Germany (Leach, 1940: 35). The kiln at Tal-i Malyan is therefore not by standard definitions a down-draft kiln.

of coarse wares similar to those recovered from a pit situated immediately adjacent to the kiln (Alden, 1978). Similarly, most of the wares produced at Siraf were coarse wares, though there are a number of alternative lines of information that suggest that glazed wares were manufactured there as well. In addition to the petrographic analysis already referred to, which indicates that Clear Splashed Glazed Ware was manufactured at Siraf (Mason & Keall, 1991: 62-63), the preliminary excavation report refers to Opaque Glazed Ware wasters as well as two glaze preparation kilns that were uncovered in the potter's quarter (Whitehouse, 1971: 12, 15). Probably by the time Sgraffiato production became common in Iran, the workshop at Site D had already gone out of use.

Evidence for late Sgraffiato production does come from a single relatively large rectangular kiln (3.10m x 1.35m) excavated close to the city of Ghubayra, which produced Monochrome Green Glazed sherds with and without Sgraffiato (Bivar, 2000: 59-60). Again, a small square kiln (0.85m^2) identified during survey at site R67A between Buluk and Fars in inland Kerman, was used mostly for firing unglazed moulded ewers but also produced waster sherds of Monochrome and Polychrome Sgraffiato (Prickett, 1986a: 1168). Close by, two circular kilns lying in a small walled compound were identified as site R67B. Trivets and kiln bars were picked up off the surface in abundance. Waster material associated with these kilns included SPW and late Sgraffiato similar to that found in the Sirjani kilns (Prickett, 1986a: 1169). During his survey of the Minab plain, Williamson identified a site that has not yet been relocated: K130F, which produced large quantities of misfired MONO.G and GRAF.G, as well as small spacer trivets with the same glaze still adhering. These sherds belong to a particularly standardised type of small thick walled bowl with a strongly curved profile, unglazed exterior and a hard well-levigated pink/orange body. What appear to be identical examples have been found at other sites within the region, suggesting that this may have been a substantial production centre for Monochrome Green Glazed Wares. Finally, Stein identified a large production site at the port of Tizian on the Persian Makran coast comprised of a series of small rooms containing an abundance of ceramic debris including trivets, kiln bars with glaze still adhering to them, and lumps of glass and glaze (Stein, 1937: 90-91). A large mound nearby was excavated and found to contain a mass of pottery mixed with ash and charcoal. The pottery was mostly a fine and standardised type of GRAF.H together with two varieties of CHAMP; one with

straight shavings and the other with more complex feathered designs (Stein, 1937: pl. IV). Identical examples of both classes are well represented at the neighbouring site of Qalat-i-Jamshid (Stein, 1937: 82-86), as well at other sites within the Persian Gulf, Southern Arabia and East Africa (Kennet, 2004: 35, 37-8, cp. 3; Rougeulle, 2005: 228, figs. 3-5; Chittick, 1984: 79, pl. 31 a-f, pl. 32 c,f; Chittick, ii.1974: 303, pl. 110 d, pl. 111 c,d; Horton 1996: 'Group 5b', 284, 289, table 14; Priestman, In Press).

The evidence for Sgraffiato and Monochrome Glazed Ware production is still incomplete. When the evidence is taken together though, one does begin to gain an impression that most, if not all of the major medieval cities in Iran had their own sizable pottery production quarter in which a number of glaze and coarse ware traditions existed alongside one another (*cf.* Sirjan, Istakhr, and Rayy for this period, and Nishapur slightly earlier). In rural areas, there may also have been smaller workshops that were still capable of manufacturing a range of wares including Monochrome Sgraffiato. On the coast, there may have been a number of very large workshops manufacturing for an export market, such as the large coarse ware workshops at Chah-kaur (Stein, 1937: 201, pl. xxvi, 7-9), the kiln complex at Site D at Siraf (Whitehouse, 1968: 12-14; 1971: 12-15), the Sgraffiato workshops at Tizian on the Persian Makran coast or site K130F in the Minab plain. This later uptake of Samarra horizon traditions is partially reflected in the data contained with the Williamson Survey (Fig. 28).

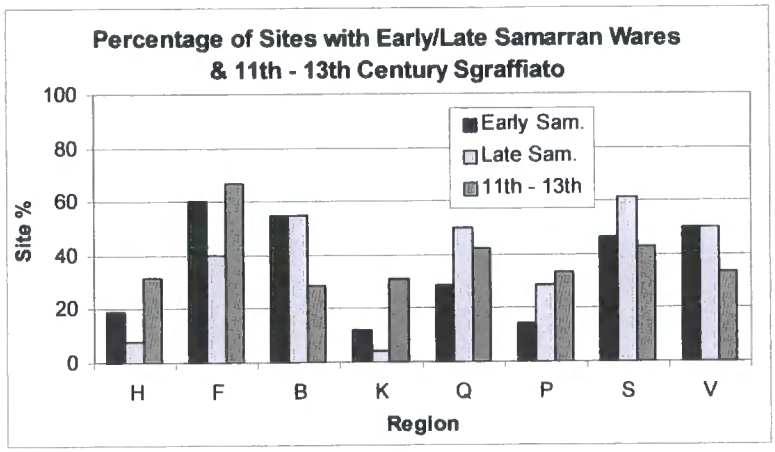

Fig. 28 *Comparison of the percentage of 9th - 11th sites with early or late Samarra horizon classes to the percentage of 11th - 13th century sites with Sgraffiato and Sgraffiato related classes.*

Again, one has to remain very cautious of the data contained in the graph above, particularly as it is the percentages of the known number of 9th - 11th century sites and

11th - 13th century sites that is being compared. What these results essentially provide is an index of how important the respective groups of pottery are in defining occupation within each of the periods. At the same time, the figures remain genuine in describing the percentage of sites recorded with particular sets of wares. From this information, it can be seen that in the areas with a sufficient site sample, i.e. five or more for each of the periods, the percentage of sites with post Samarran glazed wares appears to stabilise across the survey area. In almost all of the areas represented, whether east, west, inland, or coastal, roughly 30% of the sites produced samples of Sgraffiato and its derivatives, which include CHAMP, and Monochrome Glazed Wares. It is only in Region F that the level is significantly higher, and as this happens to be one of the areas that has the smallest site sample for the 11th - 13th century period, the percentage for this region is not reliable. Although these results are not dramatic and are by no means conclusive, they represent a departure from the more regionally variable results derived from the early and late Samarra horizon periods and add to the impression that later Sgraffiato wares became more widely available in southern Iran.

If late Sgraffiato did become more widely produced and more readily available, then it appears significant that none of the later Sgraffiatos in the Williamson Collection have the fine cream coloured body associated with the earlier Samarra horizon wares manufactured in Iraq. Instead, all have coarser orange bodies, consistent with local sources of production, which, as has been seen, are attested independently in the form of several kiln sites that have been identified in southern Iran. From the rest of the wares represented in the collection, there are currently no known glazed or coarse wares from southern Iraq that could have filled the vacuumed created by the apparent termination of supply from this area. The coarse wares of the 11th - 13th century do remain poorly understood, though there is ample evidence for the local manufacture of MEW (see Appendix I), the main coarse ware that is represented for this period in the Collection. What the evidence points to therefore, is a demise of export from an area that once dominated the supply of glazed ware to the northern shores of the Persian Gulf and the interior regions pf southern Iran. Coupled with the evidence of a general settlement collapse in the Diyala plain, one of the main agricultural regions of Iraq, starting from the 10th century (Fig. 6), one begins to see a bigger picture emerging.

Independent lines of evidence suggest that at the same time as this apparent shift in the centre of glazed ware production within the Persian Gulf, the export of glazed wares from the region assumed a new character. As was indicated earlier, Samarra horizon wares and contemporary ALK, predominantly from Iraq, are amongst the first imports from the Persian Gulf region which were received in relatively small quantities at a number of trade centres along the East African coast. One feature that is strikingly similar in the sequences from Shanga, Manda, Kilwa and Andaro - four influential coastal centres distributed between Madagascar in the south and Kenya in the north - is the almost complete absence of early Sgraffiatos. At each of these sites, the sequences appear to be marked by a further point of significant concurrence in the form of a substantial influx of later Sgraffiato of Iranian type between the 11th - 13th centuries, at a time when East Asian imports still made up only a very small proportion of the import assemblage (Horton, 1996: 281; Chittick, 1984: 79; Chittick, 1974: 302; Priestman, In Press). At Manda, the proportion of imports in the assemblage actually decreased in Period 2a when Sgraffiato was introduced (Chittick, 1984: 66). At the other sites, the introduction of late Sgraffiato marks the point at which the greatest volume of imported pottery during any period was being received. Certainly at Andaro, the assemblage is almost completely dominated by a narrow range of 11th - 13th century late Sgraffiatos (Priestman, In Press), as are most of the other Manda enclosures that have been surveyed in southern Madagascar (Parker-Pearson *et al*, In Press). At Shanga, the only site where this influx has been quantified, only a single sherd of GRAF.EP, possibly of Iraqi origin, was recovered from a total assemblage of 9,152 sherds of imported pottery represented in the phased sequence (Horton, 1996: tables, 13, 14). By contrast, Monochrome Sgraffiato alone made up 3.74% of the entire 12th century assemblage, rising further to a level of 4.01% in the 13th century (Horton, 1996: table 9, 14). These figures are substantially higher than those produced from the only quantified assemblage within the Persian Gulf itself, which is at Kush, and are higher than a typical trade assemblage, even at the peak of pottery being exported from East Asia (Kennet, 2004: table 36).

The figures from Shanga and the impression from other sites are striking, and have led to the suggestion that some form of special trading relationship existed between the Persian Gulf and the East African coast at this time (Kennet, 2004: 76). Research in other areas of the Indian Ocean would clearly be needed to establish whether the

wealthy coastal sites in East Africa were unusual in receiving such a high proportion of late Sgraffiato and Monochrome Glazed Ware from the Persian Gulf. Stop-off sites on the south coast of Yemen certainly appear to be similarly dominated by these wares[22], although these sites probably form an integral part of the same trade network. Whatever the case, the fact that large volumes of pottery manufactured in southern Iran were being exported to the East African coast, if not to other places during this period, seems significant. Clearly, pottery would not have been the only commodity being exported; in fact, it may well have only been used as ballast. Its presence in significant quantities in East Africa then suggests a substantial level of trade activity between these areas in other commodities as well. These developments emerge from what appears to be a collapse in the supply of pottery, bulk produce and other commodities from the head of the Persian Gulf that grew in momentum throughout the Samarra horizon period. This shift in economic production from southern Iraq appears to have been completed by the late Sgraffiato period.

The modifications that have been noted in relation to late Sgraffiato production in Iran are common to export industries the world over, and are indicative of the increased commercialisation of the industry. The archaeological evidence contained within the Williamson Collection indicates that these developments came at the end of a long sequence of change involving a general economic shift from Iraq to southern Iran. The success of the latter region as a bulk exporter of ceramics appears to have been relatively short lived, and by the end of the 13th century, Sgraffiato production in southern Iran had vanished, although inferior derivatives of the tradition continued to be manufactured outside the region into later periods. An example of these inferior products is the crude Monochrome Green/Yellow Glazed Ware, with and without sgraffiato, believed to have been manufactured in southern Arabia, which begun to replace Sgraffiato from the Persian Gulf on the East African coast and in the Red Sea during the 13th century, and then continued in production into the 14th century (Priestman, In Press; Horton, 1996: 'Group 6' 290-91, fig. 209, g-i; Chittick, ii.1974: 305; Chittick, 1984: 79; Whitcomb & Johnson, 1979: 106; Whitcomb & Johnson, 1982: 136. pl. 35 q,r,w,x). Similarly in Pakistan, a crude version of Sgraffiato appears to have

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[22] Information based on presentations given on the excavations at Sharma and al-Shihr in southern Yemen, see Note 20, p.116.

persisted into the 15th/16th century (Priestman *et al,* In Press; Wheeler, 1962: pl. XVIII, no.7; Mughal, 1967: fig. 34, 4, 8, pl. 23, 9, 10).

What put an end to Sgraffiato production in southern Iran was probably not the collapse of the engagement of Iran in the growing international trade during the late 13th century, but rather the introduction into the market of cheap products made from superior materials from East Asia, which started to dominate both the Persian Gulf and East African markets (P. Morgan, 1991: 78). These products, particularly Longquan Celadon, are unlikely to have appeared by accident, and must represent a new phase of engagement in long-distance trade. While these developments will be covered in the next section, it is worth noting that with the demise of the Sgraffiato industry, the complexion of ceramic production in Iran appears to have changed. From this point on it appears that Iranian ceramics are unlikely to provide an accurate indicator of the engagement of Iran in Indian Ocean trade.

4.2 EASTERN TRADE

In addition to the trade within the Persian Gulf and to the west towards East Africa, trade contacts expanded towards the east to the Indus valley during the time of the earliest civilisations and beyond to the Indian sub-continent and more distant regions during later periods. During the Sasanian period, it may be that commercial contact between the Persian Gulf and South Asia assumed a new level of importance, within the framework of a growing emphasis on commercial maritime activity (Whitehouse & Williamson, 1973). The antecedent to these developments may in part have been provided by the military campaigns of Alexander the Great and Seleucus, during which maritime routes were actively developed in order to maintain supply routes to the land based forces (Potts, ii.1990: 6-10). Later in the Seleucid and Parthian periods, a number of ports were established around the shores of the Persian Gulf as part of a deliberate political strategy to secure trade routes and provide naval protection for the Empire (Potts, ii.1990: 10, 20).

Evidence for the increased importance of maritime trade networks during the Sasanian period can be seen particularly clearly from the remains at Bushehr, where there has

been a long history of archaeological discoveries extending back to the beginning of the 19th century (Simpson, Forthcoming; Pézard, 1914; Stein, 1937: 234-41). Williamson was the first to recognise the full significance of the remains on Bushehr within a Sasanian contexts. As a result of his intensive survey of Bushehr carried out over a number of separate visits, Williamson was able to map out the substantial settlements at Rishahr at the northern end of the peninsula and Halileh and Hazar Mardom to the south, together with a string of smaller sites spread out between (Whitehouse & Williamson, 1973: 37). Some of the smaller settlements distributed across the high ground between the two main settlement areas were built on dressed stone foundations and were associated with high quality ceramic assemblages, indicating their relative wealth and status (Williamson, 1971-72b: 35). Based on the surface collections that he made, Williamson noted that there were over 450 hectares of archaeological mounding simultaneously occupied during the later Sasanian period[23]. The wealth and importance of the Sasanian settlement appeared to be further supported by the presence of a 40km long canal providing the port cities with irrigation (Whitcomb, 1987: 311), though a recent survey at several points along the length of the canal by a joint British-Iranian team in 2004, has raised serious doubts about its existence (see Carter *et al*, Forthcoming).

In relation to Bushehr's function as a commercial entrepôt, it was noted that the two major settlements at Rishahr and Halileh are both situated adjacent to the best natural anchorages off the peninsula; the former is also associated with a large stone-built jetty and fort, both linked conclusively to the Sasanian period (Williamson, 1971-72b: 34-5). Nevertheless, Bushehr never appears to have provided quality anchorages. Despite the fact that Bushehr acted as the main Persian Gulf port between the mid 16th - early 20th centuries, most of the deep draught shipping belonging to the Dutch and English East India Companies, who had major factories there, had to be docked several miles out to sea with goods being transferred onto smaller vessels from there (de Planhol, 1990: 569-70; Lockhart, 1960: 1341-2). This situation was only reversed in the 1960s and 70s when channels were dredged, providing direct access for deep draught shipping to the peninsula (de Planhol, 1990: 571). Such a problem would probably not have applied to

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[23] Williamson was careful to note that a single distinctive alkaline glazed form with a bifurcated rim (ALK: 29 & 30), which he has related to the period AD 500 - 750, covers the full extent of the 450 hectares of mounding.

traditional Persian craft. Even fairly substantial boats of a dhow type construction seen today, are able to enter shallow tidal creaks. Alternatively, small boats could also have been beached with the assistance of winches or a team of people[24].

Together, the archaeological sources from Bushehr provide a clear indication of the wealth and importance of the settlement and provide some indication of the maritime economy in which the inhabitants must have been engaged. The available history related to the site is more definitive. The massive settlement at Rishahr can be linked almost without doubt to the city of Rev Ardashir (Whitehouse & Williamson, 1973: 40-41): a port city founded by Ardashir I, and described in Manichaen texts from the 3rd century AD as the most influential trading port of the Sasanian Empire (Gropp, 1991: 86). Further information comes from the Nestorians, an influential Christian minority within the Sasanian Empire, who had several important establishments in the area, including a large monastery on the nearby island of Kharg (Ghirshman, 1960: 11-14). Between AD 554 - 790, Rev Ardashir was made the metropolitan of Parsis, and it was from here that bishops were ordained throughout the main cities of southern Iran, Bahrain, Socotra, southern India and Sri Lanka (Gropp, 1991: 85).

South Asian Pottery

As with the Mesopotamian trade, one of the few remaining direct sources of evidence of exchange with areas beyond the Persian Gulf comes in the form of imported pottery. The earliest imported wares represented in the Williamson Collection come from South Asia and include four main classes: IRPW, BPCR, IRAB and SBBW. Of these, IRPW is probably the most precisely dated and well known. The presence of IRPW at Bushehr was an important element in the original dating of the ruins there, and was used in supporting the notion of the port's engagement in long distance trading activity with South Asia (Whitehouse & Williamson, 1973: 38-9). It is significant to note that IRPW is the only class of South Asian pottery that Williamson refers to in publication, even though others are now known to exist in the Collection. Evidently, there was little knowledge of these wares in the region at the time he was working. Another rather mixed class of South Asian pottery is in fact referred to, but Williamson believed this to be a local imitation of IRPW (Williamson, 1972d: 'type 2a' 100, fig. 5). Williamson's

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[24] Personal observations made at Tiab and Kuhistak in the Minab Area in 2005.

Type 2a in fact almost certainly corresponds with what has been referred to here as BPCR; a class believed to originate somewhere within the modern borders of Pakistan. Of the remaining classes, IRAB may well be the most common South Asian class represented in the western Indian Ocean, although it is not the most common South Asian class in the Williamson Collection. Finally, SBBW is closely related to IRAB, and likewise is well known from excavated contexts within the region, including Sohar and Kush (Kervran, 1996: 38; Kennet, 2004: 66).

In the absence of secure dating evidence for most of the South Asian classes, a preliminary examination was made of site assemblages containing high frequencies of the four principal South Asian classes. What emerged from this exercise was the fact that BPCR and IRPW occur most often together, and almost exclusively in assemblages characterised by Late Sasanian/Early Islamic classes such as CLINKY, SMAG, LISV and ALK.1-2. In contrast, IRAB and SBBW are found in assemblages with much broader date ranges, including typical Sasanian wares, as well as classes extending into the 13th/14th centuries or later. It appears then that the latter two classes probably overlap chronologically with the first two, but continue in circulation later. These conclusions are also supported by the dating evidence from Ras al-Khaimah and Bahrain (Kennet, 2004: 66, table 3; Hansman, 1985: 48, fig. 11, a-c; Frifelt, 2001: 87, figs. 147, 151).

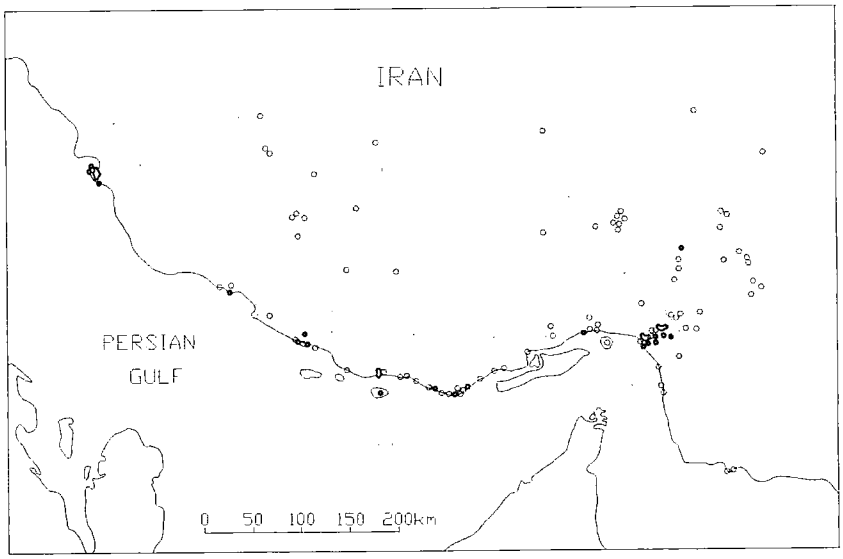

Fig. 29 *Sites marked in red are those that have produced finds of the four main South Asian class in the Williamson Collection: IRPW, BPCR, IRAB and SBBW. Regions outlined and labelled are referred to below.*

Given the origin of the South Asian classes, it is not surprising to find that only 0.9% of assemblage in the Williamson Collection come from inland sites. Looking at the distribution of all four groups combined (Fig. 29), one can see that they are spread quite evenly along most of the coast, although with particular concentrations of sites occurring in the two more heavily surveyed areas: Bushehr (Region H) and the Minab plain (Region K). This provides a similar picture to that originally published for IRPW on its own (Whitehouse & Williamson, 1973: fig. 7).

Within the coastal region and between the respective classes, there are further variations in the distribution not revealed in the basic plot of sites (Fig. 30).

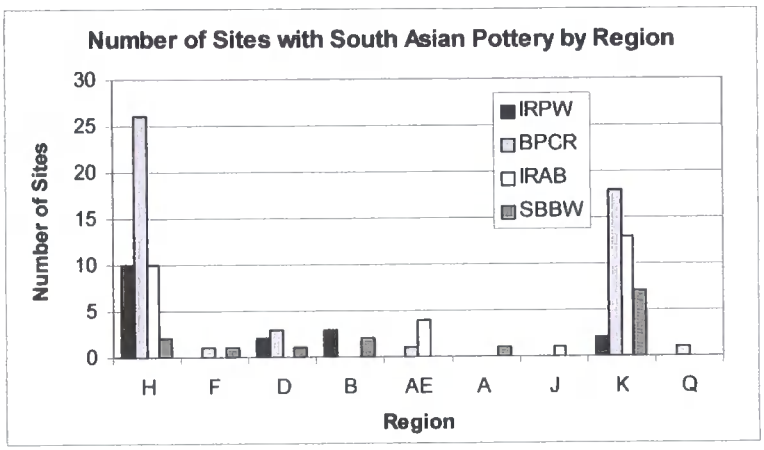

Fig. 30 *Count of the number of sites within each Region producing assemblages containing sherds of each of the main South Asian classes: IRPW; BPCR, IRAB and SBBW.*

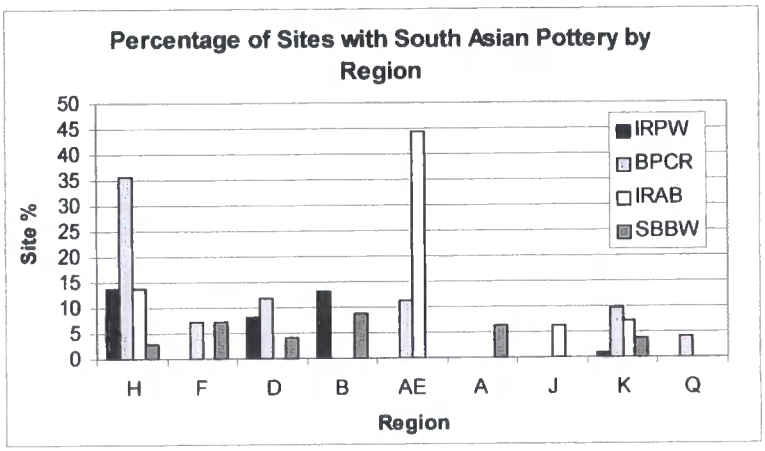

Fig. 31 *Sites with the four main classes of South Asian pottery expressed as a percentage of the total number of sites within each Region.*

Looking at the basic occurrence of the four classes by Region (Fig. 30), there are clearly many more sites with South Asian pottery from Regions H and K, although this is clearly a reflection of the fact that there are much higher site counts for these Regions than there are for any of the others. Between these Regions, however, there are some important differences to note. In particular there are a significantly greater number of the earlier dated classes, IRPW and BPCR, particularly the former, from Region H; while in Region K there are significantly greater numbers of sites with the two later dated classes, IRAB and SBBW; in this case particularly the latter. What appears to be a temporal shift again corresponds to the broad pattern that emerged from the analysis of site numbers by period in Chapter 3.

A more informative picture is provided by expressing the number of sites on which the four main South Asian classes occur as a percentage of the total number of sites within each Region (Fig. 31). Here, it is interesting to note that BPCR, although probably dated to the same period as IRPW, has a wider and more even distribution outside of Region H. Compared to IRPW, the class also shows a more even distribution between the Upper and Lower Persian Gulf, including the only inland findspot from Region Q. The occurrence of this class in the Lower Persian Gulf may reflect its affiliations to pottery from the southeastern provinces of Iran, and the connection of those areas through the Minab plain to Kerman, Baluchistan and Makran. In fact, such a route of communication and cultural affiliation is already suggested by the association between the FOPW with its concentrated distribution mostly within the Lower Persian Gulf and Kerman (see Appendix I) and the slightly earlier but chronologically and distributionally overlapping Londo tradition of southeast Iran and southwest Pakistan (de Cardi, 1951; Ramachandran, 1974; Sajjadi, 1989). This alternative distribution may indicate a distinct contact network operating at a more localised level within the Lower Persian Gulf during the earlier Sasanian period. In contrast to BPCR, IRPW may have been associated more directly with the long-distance trading connections to western India, which might explain why the bulk of the IRPW finds come from one of the main centres of long-distance trade in the Persian Gulf, Bushehr and its closest neighbouring areas, Regions D and B. These contrasting systems may negate the straightforward equation that has been made between Indian pots and people (Hansman, 1985: 48; Frifelt, 2001: 91), and replace it with a model based more closely on networks of goods distribution.

Another significant point to note is the very high percentage of sites on Kish Island (Region AE) that produced assemblages containing IRAB. This potentially offers an indication of a later period of intense trading activity with South Asia, as the port of Kish reached the height of its prosperity between the 11th to 13th centuries before the rise of Hormuz from the 14th century (Whitehouse, 1975: 267-68). This result is heavily tempered, however, by the low number of sites for the Kish Island Region. Probably the most prevailing trend overall in relation to the South Asian classes is that they are distributed widely along most of the coastal area covered by the survey and not just within the major centre at Bushehr. At the same time, all types appear to be more common in the regions situated within the Upper Persian Gulf area, particularly the earlier dated classes.

East Asian Pottery

East Asian pottery represents one of the most significant components of the Williamson Collection. From a total assemblage of c.17,000 sherds, c.3,500 are from East Asia, accounting for 20% of the Collection. This proportion is far in excess of the frequency of East Asian imports in assemblages of coastal sites in the western Indian Ocean during the Islamic period, which generally lie somewhere within the region of 0.6 - 3.75% (Rougeulle, 1996: 175; 2005: 226; Kennet, 2004: table 32). The reasons for this emphasis are clear: East Asian ceramics survive better, stand out more and can generally be far more precisely dated than their local counterparts, particularly at the time when Williamson was working; factors that attracted their recovery during surface survey. At the same time, East Asian imports can be seen as the manifestation of a highly significant development within the region in the form of expanded trade contacts within the Indian Ocean, although the trade of ceramics probably only ever represented a marginal aspect of such a trade. Although questions remain over what proportion of the East Asian assemblage is represented within the Ashmolean Collection, the prominence that Williamson gave to East Asian ceramics during the survey means that this is potentially one of the most fully represented aspects of the Collection, and thus is particularly likely to yield significant results.

East Asian pottery was collected from 215 sites distributed throughout the survey area, although with a particular concentration along the coast. The Williamson Collection sample of East Asian pottery, both in terms of sherd and site numbers, represents a

unique resource within the Persian Gulf and should be sufficiently large as to be able to identify regional and chronological trends with a reasonable degree of confidence. The potential to interpret distributional trends related to East Asian ceramics within the region have recently been significantly enhanced by the publication of the first fully quantified sequence from the Persian Gulf, from the combined assemblages of Kush and al-Mataf. Together, this sequence covers the period from the 4th/5th to late 16th/early 17th centuries, with East Asian pottery first appearing in Phase E-07, dating from the late 11th/early 12th century (Kennet, 2004: table 3). The fact that there are no sherds of East Asian pottery in the Kush sequence up until a relatively late date, could be related to several factors including: the size and importance of the site; the size of the quantified assemblage, or the fact that Kush appears to have been partially abandoned between the 9th - 10th centuries[25].

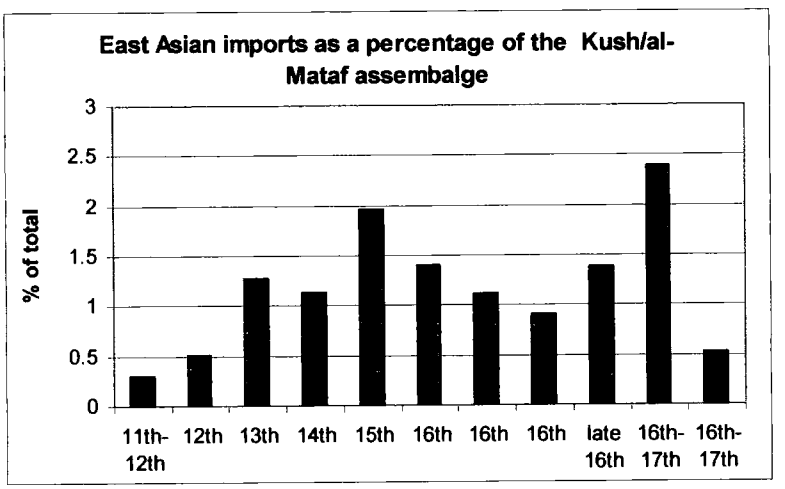

Fig. 32 *Sherd count of East Asian wares as a percentage of the entire assemblage through Kush Periods V-VIII and al-Mataf Periods I-REC, based on Kennet, 2004: table 32.*

A plot of the percentage of the combined assemblage from Kush and al-Mataf made up of East Asian imports during different periods reveals a number of important trends (Fig. 32). Until the 13th century the proportion remains relatively low, after which one sees a significant increase coinciding with the period when Celadon, particularly of the Longquan region (LQC), began to be exported in large quantities from China. This may have been a period when the volume of trade from China to all areas of Indian Ocean

[25] One probable 9th century sherd of T'ang splashed green on white ware (GWSG) was in fact recovered from the surface of Kush in 2004 suggesting that the absence of these earlier imports from the Far East is in fact just a limitation of the size of the overall assemblage sampled.

increased significantly (Kennet, 2004: table 33). The slight dip in the 14th century falls at the cusp between the sites of Kush and al-Mataf and the point when the sequence is regarded as being the least reliable. However, between the 13th - 15th centuries and moving from the site of Kush to al-Mataf, one can see that the pattern is one of continuing growth. The 15th century is marked by the major transition from LQC as the main export ware from East Asia to CBW, mostly from the kilns at Jingdezhen. The production of the latter was perhaps an even more commercial enterprise, and it is somewhat surprising to see that the proportion of East Asian imports decreases during the 16th century in the al-Mataf sequence, although by the late 16th - 17th century the proportion of the al-Mataf sequence made up of East Asian imports is shown to be higher than in any other period. This dip in the proportion of East Asian pottery in the al-Mataf sequence through part of the 16th century may well be due to specific local circumstances, as the town appears to have gone through significant economic decline during this period (Kennet, 2003: 119-20). The surprising increase in the proportion of imports during the later 16th/early 17th century, during a period when al-Mataf consisted of palm front huts build amongst the ruins of the former town (Kennet, 2003:120), may well be connected with a significant change in the scale of East Asian imports to the Persian Gulf as a whole (see below).

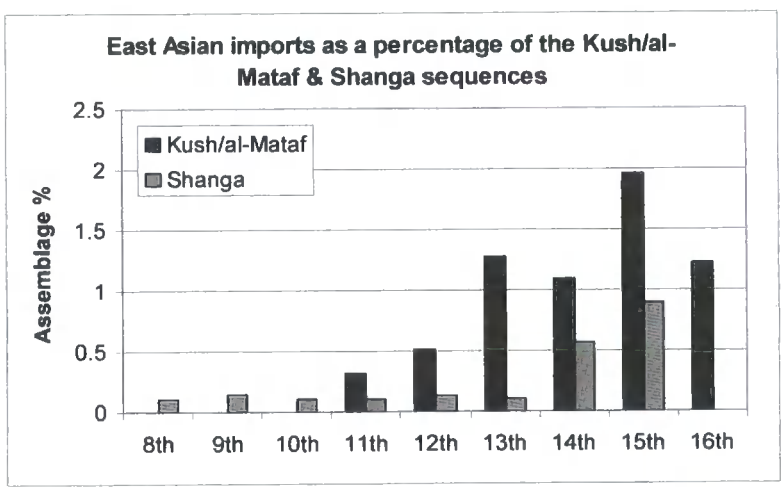

Fig. 33 *Comparison of the Kush/al-Mataf sequence in the Persian Gulf and the Shanga sequence in East Africa in terms of the percentage of each assemblage made up of East Asian imports during equivalent periods, based on Kennet, 2004: table 31.*

A comparison of the Kush/al-Mataf sequence with the only other quantified sequence in the Indian Ocean, which is from Shanga in East Africa, shows that there are

considerable differences in the frequency of East Asian imports during different periods (Fig. 33). This suggests that there may be many more regional sequences yet to be defined. In terms of the patterns of development within the Persian Gulf, the Kush/al-Mataf sequence provides a standard against which to compare the survey data, although to what extent it will be representative of the wider area covered by the survey remains to be seen. A general point raised by the analysis of quantified ceramic sequences in relation to East Asian trade, is the fact that even small proportional changes appear to betray significant levels of change in wider commercial activity. One of the ramifications this has for the comparative study of composition changes between assemblages, including those from survey, is the fact that very large quantities of material will need to be looked at in order to identify subtle changes that may be indicative of significant differences in regional patterns of consumption or development.

Another aspect related to the interpretation of the East Asian assemblage concerns its dating. As has already been mentioned, the dating for East Asian imports is generally much more refined than it is for many of the locally produced wares. There are a number of reasons for this. Important factors include: detailed studies of production sites within East Asia (e.g. Ho Chuimei, 2001), the examination of assemblages from precisely dated shipwrecks (e.g. Guy, 2001-02; Flecker, 2001), and most importantly, the interest that East Asian ceramics have attracted from collectors in the art market and museums (Krahl, 1986). As a result, it is possible to put forward a much more detailed chronological breakdown for the East Asian assemblage than was possible during the previous chapter on settlement distribution. The periodisation that has been offered below is based on the dating of the 101 East Asian classes that have been recognised within the Williamson Collection[26], and on the time units into which the greatest number of these classes most readily fit (Table 11). The procedure adopted for classes whose known date ranges crosscut one or more of the period divisions has been described in an earlier section (p.85-6).

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[26] The dating for each of the classes is based on the personal opinions of Regina Krahl and John Guy and, where possible, on independent parallels drawn from excavated assemblages. All of the Chinese sherds were inspected by Regina Krahl (4th September 2003), who together with the author and Derek Kennet, agreed on the sub-divisions that have been created. Most of the Southeast Asian pottery and South China Stoneware, excluding the Dusun and Martaban classes, were inspected by John Guy (12th December 2003), who together with the author agreed on the internal sub-divisions. The criteria by which these groups are recognised are described fully in the class catalogue (Appendix I).

Period	Date Range	Main Classes
1	8th - 10th	DUSUN, CHANG, GWSG
2	10th - 12th	WWSL, WWS.1-9, WWF, WWG.1, GDC.1
3	13th - 14th	LQC.1, DEH.1, QING.1, STO.GRY, GDC.2
4	14th	LQC.2, GDC.3, CBW.1, VBW.1
5	15th	LQC.3, CBW.2-3
6	16th	CBW.7-20, 23-27, 30, 32, ENAM
7	16th - 17th	CBW.21-22, 28-29, 31, 33-37
8	18th - 20th	CBW.38-41, 44-45

Table 11 *Periodisation based on the dating of East Asian pottery (see Note 26 below). Note that only those classes that fall within a single period are listed in the right hand column. For full listings see Appendix I.*

Regional Distribution of East Asian Pottery

Looking at the distribution of East Asian pottery as a whole, of the 215 sites that the material was collected from, 26 are situated in inland locations: representing 12.1% of the total number of sites with East Asian pottery in their assemblages. A breakdown of the inland sites by region provides a rather varied picture (Table 12). Unlike the remaining 87.9% of the sites with East Asian pottery that are situated on the coast - which can clearly be linked to the maritime trade network and the low relative cost of ceramic transportation in that area - for the inland sites there appears to be little apparent correlation between proximity to the coast and the frequency of East Asian imports. In this case, it has been argued that the central factor responsible for determining whether sites had access to such pottery was their relative status (Williamson, 1971c: 4). Thus major cities such as Sirjan and site P1, both situated at considerable distances inland, were able to attract East Asian imports by virtue of their size and wealth; the latter during a period when low frequencies were only first arriving on the coast[27]. It appears then, that the percentage of sites with East Asian imports for each region probably relates more to the number of high status sites within that region rather than the region's geographic location.

Region	Area	Sites	%
P	Upper Halil-Rud	3	16
Q	Ruddan	8	32
S	Sirjan area	7	39
V	Shiraz region	7	27
Z	Bam to Rayen	1	20

Table 12 *Totals and percentages of inland sites with Far Eastern pottery by survey Region.*

[27] Site P1 produced one sherd of DUSUN and one sherd of GWSG.

A more detailed way in which to consider the differences between inland and coastal regions is to look at the number of sites within each area, broken down according the eight-phase periodisation proposed in Table 11 (Fig. 34).

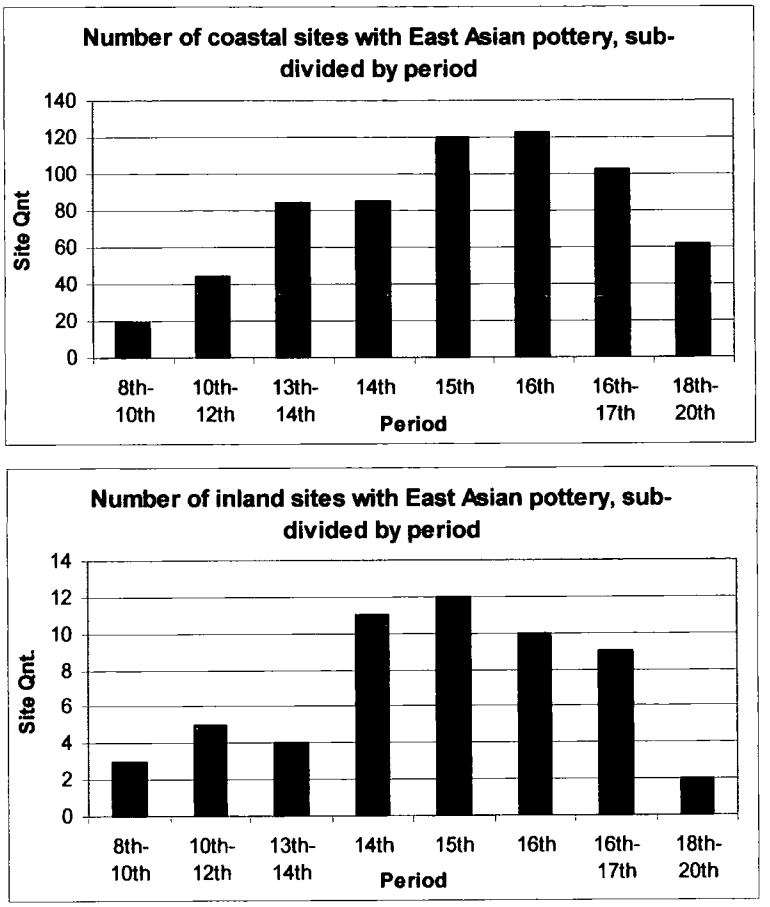

Fig. 34 *Comparison of the number of coastal and inland sites with assemblages containing East Asian pottery by phase.*

The most important difference between the patterns for the two areas is the initial point made before regarding the ratio of inland to coastal sites. While there are roughly one third of the number of inland to coastal sites represented within the survey, closer to one tenth of the number are represented with finds of East Asian pottery. Although the number of inland sites may be too small to support any secure conclusions, some interesting points of comparison and contrast do emerge. On a general level, there appears to be some similarities between the inland and coastal areas, with an increase in the number of sites through the sequence, reaching a peak in the second half of the graph, and then declining again at the very end. These similarities, although extremely generalised, do suggest that there may be some validity in the overall pattern provided, even with the relatively small inland sample. On a more specific level, there are also

some important differences. In particular, while the later 13th/early 14th century period sees almost a doubling in the number of sites in coastal areas, this dramatic change does not occur in inland areas until slightly later in the mid/later 14th century. In addition, while the number of sites continues to grow slightly between the late 13th - mid 16th centuries in the coastal area, the number of sites reaches its peak by the 15th century in the inland region, after which the numbers begin to decline. These differences may be partly a reflection of the small size of the inland sample and factors related to the currency of particular high status sites, as has been discussed. Alternatively, they may reflect different sets of dynamics affecting the inland and coastal zones. For example, the delay in the dramatic rise in the number of sites receiving imported pottery after the introduction of LQC in inland areas, may be seen as a knock-on effect of growth first experienced on the coast, which later spread out through the wider area.

Another way to consider the data is to view the number of sites by period as a percentage of all known sites across the survey area (Fig. 35). The overall pattern provided by these results appears very similar to those presented above for the number of coastal sites broken down according to the same periodisation. This is not surprising, as the coastal sites form the bulk of the sample, and therefore the pattern is based largely on the same data.

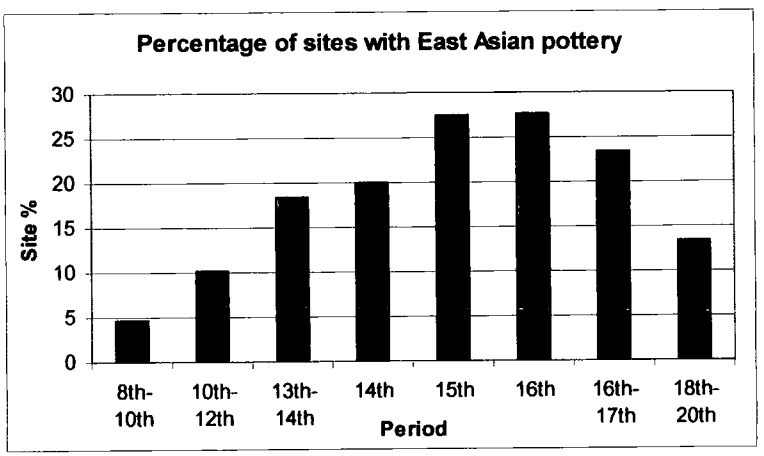

Fig. 35 *Sites receiving East Asian imports displayed as a percentage of the total number of sites sampled across the survey area.*

A number of important patterns emerge from this presentation of the data. During the earliest part of the sequence up until sometime within the 10th century, in most cases before the arrival of true porcelain, the percentage of sites receiving East Asian imports

is less than half of those that received ALK from Iraq during the same period (at least 12.32% of 8th - 10th century sites have produced ALK[28]). The rate of growth over the next two periods is dramatic, with the percentage of sites almost doubling within each period. By the later 13th/early 14th century, the percentage of sites had reached two thirds of the level at which it later peaked. Between the early 14th - mid 16th centuries, the period divisions are shorter than actually required, with the level remaining virtually unchanged through the 14th century, shifting to its highest level throughout the sequence between the 14th and 15th centuries, and then stabilising again up until the later 16th century. From the later 16th century, the percentage begins to fall once more, slowly at first, and then more dramatically into the modern period. The fall in percentage at the end of the sequence may have more to do with the collection strategy for this period, than with any prevailing archaeological trend, as the post 17th century fell out-with the remit of Williamson's investigation. How Williamson went about selecting the later material out has not yet been satisfactorily answered. It is unlikely that he had developed the ability to distinguish between 16th and 17th CBW, the main East Asian ware from this period, as the distinctions between the two are extremely subtle and beyond the abilities of most researchers. The existence of some 17th - 20th century CBW in the assemblage is probably an indication of the fact that many of the more recent sites continued to be occupied into modern times, as well as the fact that Williamson had not developed comprehensive criteria for distinguishing modern assemblages. The fact that there is also some drop in the later East Asian imports is probably an indication of the fact that he had achieved some success in filtration based on the identification of local type fossils for the post-17th century period.

Overall, the sequence provides a pattern of continuous growth up until the 16th century, continuing through the period in which a decline in percentage was noted in the sequence at al-Mataf (Fig. 32). Within this, the dating of the third period is of particular importance, as it is still open to question, and the dating that has been followed fundamentally affects the appearance of the sequence as a whole. This period is marked by a significant growth in the number of sites receiving East Asian pottery, as has already been noted. This is also the period when it has been argued that Old Hormuz (site K103), in the Minab plain, came into existence, based on the absence of typical

[28] This figure is based on the number of sites with ALK: 01, 23, 31, 32 and 33 forms.

period indicators for the 12th century and the occurrence of LQC, QING.1 and DEH.1, all apparently datable to the 13th/early 14th century (P. Morgan, 1991: 70-71). P. Morgan went on to suggest that the site may have been abandoned by the earlier part of the 14th century, based on the absence of the type of LQC known from the Sinan shipwreck (dated to AD 1323), which had unglazed stacking rings inside the foot-well, and also the absence of CBW (P. Morgan, 1991), which others have argued came into circulation in the Persian Gulf during the 14th century (e.g. Gray, 1948-49; Williamson, 1972e: 57). These dating elements correspond with the historical information on the site, which indicate that it is likely to have fallen into serious decline within the 14th century, when the city of Hormuz was moved to Jarun Island.

The foundation date suggested by P. Morgan for site K103 is of considerable importance to the dating adopted here (P. Morgan, 1991: 70-71), as this is the main type-site for three wares: DEH.1, QING.1 and STO.GRY, which are all well represented in the Williamson Collection, but which could potentially have longer date ranges[29]. This point is not easy to verify, although two of the wares: DEH.1 and STO.GRY have been found in other contexts supporting the narrower dating provided by site K103. At Kush, DEH.1 only appears in the sequence in Phases E-10, dated to the 13th or possibly early 14th century, before the main site's abandonment (Kennet, 2004: table 3), and At Luluyyah fort in Sharjah, STO.GRY has been recovered from contexts dated to the late 13th - 14th centuries, based on the ceramic assemblage, particularly LQC (Sasaki & Sasaki, 2001: 12, pl. 7 centre row left, 2nd column centre row). If all three of these wares can be dated, as is suggested, to the 13th - 14th century and no earlier, then the picture of continuous but rapid growth in the number of sites across the survey area receiving East Asian imports between the 10th - 12th and 13th - 14th century periods has a secure foundation (Fig. 35).

Emporia 'Migration'

The growth of the site of K103 is itself an historically important event, and one that Williamson linked to the competition over control of the trading monopoly in the area between two immensely powerful rivalling factions; one based at Kish and the other at Hormuz (Williamson, 1972e: 57). This campaign was finally won by the rulers of

[29] Krahl suggested a date range of 12th - 13th century for DEH.1 and 11th - 13th century for QING.1 (pers. comm. 2003); Guy proposed an 11th - 13th century date range for STO.GRY (pers. comm. 2003).

Hormuz during the early 14th century; a point that Williamson argued marked the collapse of Kish and the shifting of complete trade dominance down into the Lower Persian Gulf (Williamson, 1972e). It was also around this time that Hormuz was moved to the more secure location of Jahrun Island, an event that is marked archaeologically (Bakhtiari, 1979). Following the relocation of the city, New Hormuz became an immensely wealthy centre, controlling the trade monopoly within the Persian Gulf and handling goods from across the Indian Ocean. This situation continued up until well into the period of European dominance in the area, and only ended with the shift to Bandar Abbas with the loss of the Portuguese control of the Straights of Hormuz in AD 1622 (Chaudhuri, 1985: 92).

These later events within the period covered by the Williamson Survey, which also coincide with the period when East Asian imports were being disseminated most widely within the Persian Gulf, come at the end of a longer sequence of developments. When this important trade contact with East Asia first began is one of the questions that Williamson set out to resolve through archaeological survey. Clear historical and archaeological evidence exists for trade contacts between the Persian Gulf and India during the Sasanian period, as has been discussed above. The possibility that these contacts extended into East Asia has also been suggested, although the historical basis for the argument has also been strongly refuted (Hourani, 1947). Having examined the relevant literature and the archaeological materials recovered from three years of fieldwork, Williamson was able to conclude that there are few indications of direct trade contacts being established with East Asia earlier than the 8th century, after which the volume of trade appears to have increased dramatically (Williamson, 1971-72b; Whitehouse & Williamson, 1973: 49).

The ceramic sequence excavated at Siraf has been particularly important in understanding these earliest developments. From the materials excavated in the foundation platform of the Friday Mosque, it has been shown that Chinese pottery was imported to the site in considerable volumes even before the advent of the Samarra horizon (Whitehouse, 1968: 18; 1969: 59; 1979: 56). These earliest East Asian imports recovered from the pre-Mosque construction levels are dominated by two major classes: heavy green-glazed stoneware jars (DUSUN) and painted stoneware bowls (CHANG). Important corroboration of this pattern comes from the fortuitous discovery of a

shipwreck off the shores of Belitung island, in Indonesian waters, containing as many as 56,500 CHANG bowls stacked inside DUSUN jars (Guy, 2001-02). Also contained within the cargo were a number of other fine export wares, including GWSG, all occurring in much smaller quantities, and drawn from a number of different regions within southern China.

The discovery of the Belitung shipwreck, which can be dated to c.826 AD or shortly afterwards, has shed important light on the early development of trade contacts with East Asia. In particular, the fact that the boat was built from timber most likely to derive from sources in India or East Africa and was constructed following a Near Eastern design (Flecker, 2001: 345-48), strongly suggest that Persian Gulf merchants had begun to make the direct voyage to China within the first quarter of the 9th century, and were bringing back large cargoes of ceramics, some of which were probably intended for markets within the Persian Gulf. The sheer size of the Belitung cargo though is surprising. With only thirteen sherds of CHANG from six different sites contained within the Williamson Collection, one can gain some impression of the extent to which the archaeological record has become diluted. Presumably a cargo of 56,500 whole pots could produce several million sherds once broken down, and it appears highly unlikely that the Belitung cargo represents a lone example. Whether much of the Belitung cargo would have been off-loaded *en route* to the Western Indian Ocean or trans-shipped by other vessels are questions that are currently unknown, though they remain central to our understanding of basic mechanisms behind this early trans-Indian Oceanic trade.

The lack of quantification in the Siraf sequence makes it extremely difficult to assess the impact of this early trade, or to measure the changing scale of the ceramic trade from East Asia over the centuries that followed. What is clear is that the city underwent a dramatic expansion during the 9th century, in phases that post-date the first East Asian imports. The wealth and importance that the city of Siraf attained is clearly demonstrated by its scale and the nature of the architecture excavated there (Whitehouse, 1967; 1968; 1969; 1970; 1971; 1972; 1974). These developments were however short-lived, with the city reaching its apogee within the 10th century, and then slipping into irreversible decline during the late 10th and early 11th centuries (Whitehouse, 1975: 263-64). The fragility of the economic base upon which Siraf depended appears to be common to many of the great port cities within the Persian

Gulf. At Siraf, this is dramatically emphasised by the inhospitable landscape that surrounds the site, and the lack of potential arable land close by (Stein, 1937: 202-07), although those soils that could be used were brought under cultivation (Wilkinson, 1974). Within this setting, the growth of the city must have been largely dependent on its role as a major trans-shipment point for long-range shipping arriving in the Persian Gulf. From Siraf, goods may have been loaded onto smaller vessels capable of navigating the more shallow and treacherous waters leading towards the head of the Persian Gulf on the way to al-Basra and other major centres of consumption in southern Iraq (Chaudhuri, 1985: 49), as was the case earlier at Bushehr (Whitehouse & Williamson, 1973: 43). In this respect, Siraf probably inherited its role directly from the earlier port at Bushehr (Priestman, 2005). What caused Siraf to succeed over Bushehr is not clear, although the fate of these two cities was almost certainly interlinked (Williamson, 1971i: 6). Similarly with the decline of al-Basra, which occurred against a backdrop of general recession within southern Iraq, Siraf rose to the height of its prosperity (Whitehouse, 1975: 263-64), possibly as it became an important centre of consumption itself. This pattern appears to continue, with the emerging power of Kish exploiting the downfall of Siraf, which may have been hastened by the devastating earthquake in AD 977. Eventually, the rulers of Kish forcibly seized power from Siraf in the 11th century, and redirected shipping further south (Whitehouse, 1975: 64).

Shifting Economic Zones

This narrative of events is undoubtedly oversimplified, as there are many different factors involved in the succession of power within the Persian Gulf, and these are likely to have changed substantially between the Sasanian period and the arrival of European powers within the area. At the same time, there appears to be a consistent trend that runs throughout the period. Within each era, the Iranian shore of the Persian Gulf appears to have been dominated by a single major entrepôt with its own dependent hinterland. Through time, there appears to be a clear succession of one regional centre to the next, and in each case, there is a consistent migration towards the south, from Bushehr to Siraf, Siraf to Kish and Kish to Hormuz. This distinct pattern - which conforms to the classic core/periphery-dependency model set out for Iron Age Greece (Bintliff, 1999: 25, fig. 2.4) - appears to characterise the archaeology of the Persian Gulf from Sasanian through to Late Islamic times. Such a pattern is unlikely to have happened by accident, and must itself have been linked to broader structured processes of change that occurred

during the period. Before attempting to integrate the results that emerge from the analysis of Williamson's survey into a discussion of this 'bigger picture', it is worth considering how and whether the East Asian corpus supports the schematic outline that has been provided.

As has already been seen, there appear to be significant differences in the way in which East Asian imports were received in inland and coastal areas. With the migration of the major entrepôt dealing with East Asian trade along the north shore of the Persian Gulf that has been described, it can also be anticipated that different sectors of the coastline covered by the Williamson's survey will provide different patterns in terms of the frequency of East Asian imports received during different periods. The most convenient way in which to view the data is to group together the different areas of the survey into Upper, Middle and Lower Persian Gulf and inland areas, and to look at the percentage of sites within these zones receiving material from different periods. A further way in which to reduce the variables is to group together the main wares that were traded during different periods. Conveniently, this can be broken down into Tang Wares, White Wares, Celadon, and Chinese Blue and White. Apart from the White Wares, there appears to be limited chronological overlap between these groups and with the White Wares, only those groups that fall chronologically between the Tang Wares and Celadon have been included (Fig. 36).

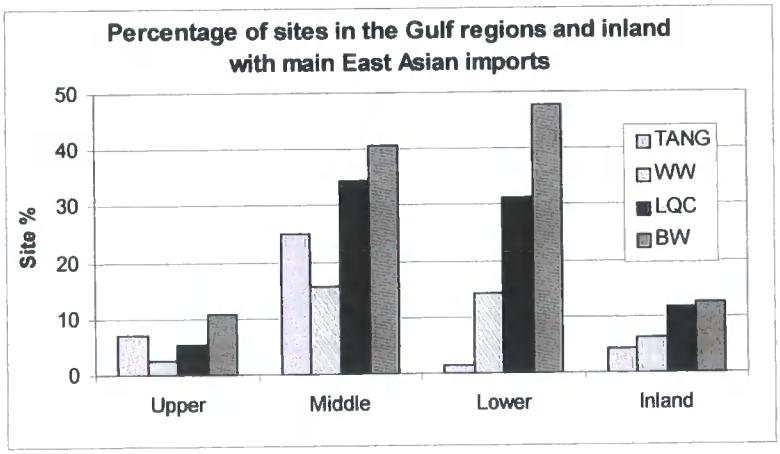

Fig. 36 *Percentage of sites in the upper, middle and lower Persian Gulf and inland areas with each of the main East Asian Wares. Tang = CHANG, DUSUN & GWSW; WW = all WW from East Asian Period 2 (see Table 11); LQC = LQC.1-4 & BW = CBW.1-45, VBW.1-2. Upper = Regions H, F & D; Middle = AE & B; Lower = Regions AA, A, J, K & L; Inland = Regions P, Q, S, V & Z.*

With the exception of the 'Tang' distribution, it is striking to note that all of the areas experienced the same basic trend, with the main East Asian import wares becoming increasingly common through time. The major difference is that in the Lower and Middle Persian Gulf regions, this increase is of a magnitude many times in excess of that in either the inland or the Upper Persian Gulf regions. In the initial period, this trend is altogether different, with the highest percentage of sites receiving 9th - 10th century imports occurring in the Upper and Middle Persian Gulf areas. The Middle region in particular displays an unexpected pattern, with a quarter of the sites receiving imports during the period when they first arrived in the Persian Gulf; a level much higher than in the Siraf and Bushehr areas. From the 10th/11th century, the percentage of sites in the Upper and Middle Persian Gulf actually drops, although in the Middle zone it remains higher than in any other area. From the later 13th - 15th centuries, all areas see an increase in the percentage of sites receiving LQC, although in the Middle and Lower Persian Gulf this effect is far more significant. Within the last phase represented, the Lower Persian Gulf experiences the most significant growth with almost half of the sites receiving CBW. From this data, it is clear that different areas experienced radically different sequences of development in terms of the long-term pattern of East Asian ware imports. Most striking is the extreme contrast between the Upper and Lower Persian Gulf. The percentage of sites within the Upper Persian Gulf area receiving East Asian imports was actually lower than it was in inland areas during all but the initial period. This is most apparent during the currency of LQC, during which proportionally twice as many inland sites received this pottery.

Given the fact that the Upper/Lower Persian Gulf divide emerges so strongly both in the data above, and in the rest of the analysis that has been presented, it is worth attempting to pinpoint the transition point more precisely. Historically, the decisive moment was marked by the defeat of the powers at Kish, which saw the switching of the main power base down into the mouth of the Persian Gulf. As has been seen, this was linked with a massive settlement expansion within the Minab plain region and surrounding coastal tracts, including rural Ras al-Khaimah and Regions Q, L, J, A & B (see Chapter 3 & Kennet, 2002). While the broad outline of these events is well known historically, it appears that the archaeological dating of the principal processes need to revaluated. Williamson argued that the abandonment of Kish came in the decades immediately after the Hormuzi defeat in the early 14th century, based principally on the absence of CBW

at Kish, and its presence on Jarun Island (Williamson, 1972e: 57). While he and others are correct in suggesting that CBW was in circulation in the Persian Gulf by the 14th century, the dating of the Williamson survey assemblage indicates that there are only a few CBW sherds belonging to the early 14th century Yuan period, none from the late 14th/early 15th century Ming period, and still only a few belonging to the mid-15th century. It was in fact only from the late 15th/early 16th century that the quantities of CBW rose to any significant level (Fig. 37). This impression is further supported by the excavated sequence from al-Mataf, which produced 215 sherds of CBW, none of which appear before Phase III of the Mosque, which has been dated to the later 15th century, with the level rising significantly into the 16th century (Kennet, 2004: table 7).

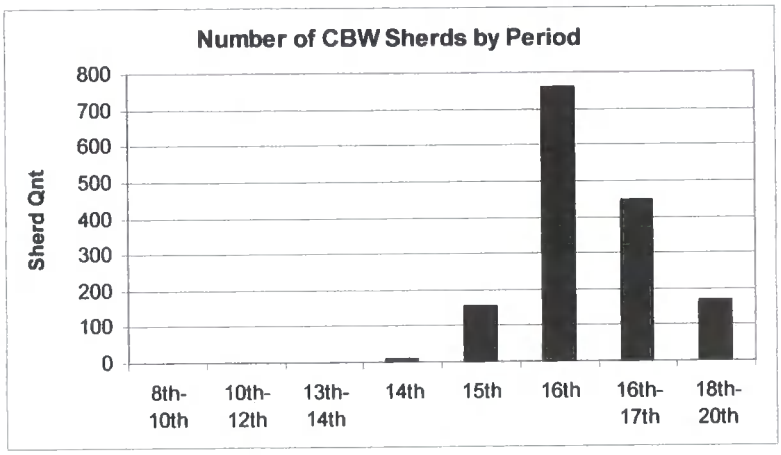

Fig. 37 *Number of CBW and VBW sherds in the assemblage broken down by period.*

The terminal dating for Kish Island, and to a certain extent for site K103, appear then to be based on an insecure premise; one that is derived from the dating based on court standard material rather than trade assemblages. If one compares the data from the Islands of Kish and Hormuz in terms of the total number of East Asian sherds from each period for the two islands, this fact appears to be borne out (Fig. 38).

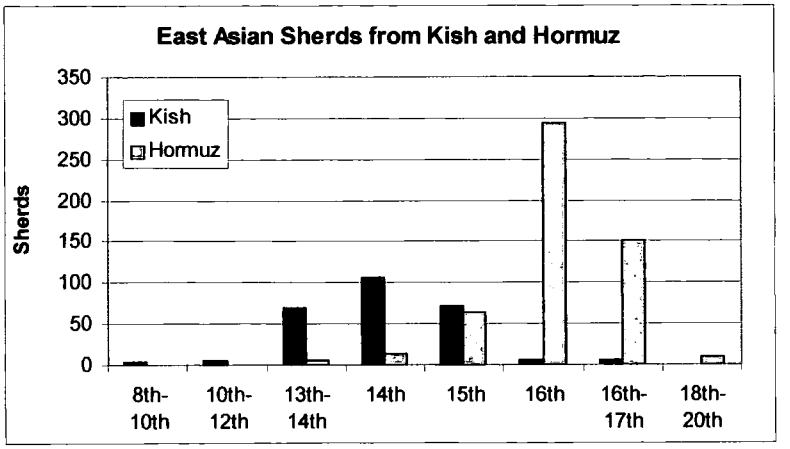

Fig. 38 *Number of East Asian sherds by period from the islands of Kish and Hormuz represented in the Williamson Collection.*

One can see that the critical point of eclipse in the trade of East Asian ceramics between the two areas does not occur until the 16th century, and when this happens, the effect is dramatic, with a fall in the sherd count from 71 to 5 between the 15th and 16th centuries at Kish, and a corresponding rise from 63 to 294 at Hormuz. It appears then that the significant shift that Williamson identified (Williamson, 1972e: 57), and which is reflected in the data presented above, may in fact have occurred some time later. If one were to identify a historical cause for this pattern, then it would appear that it has rather more to do with European activities within the area than the rivalry between the powers of Kish and Hormuz and the events marked by their infamous battle.

CONCLUSION

Andrew Williamson carried out one of the largest and most ambitious archaeological surveys undertaken in the Middle East during the course of his doctoral research, between 1968 - 1971, concentrating on the region of southern Iran and the north shores of the Persian Gulf. The techniques that he used were simple and in keeping with those adopted by other researchers of his day. The scale of his investigation and the vision behind it was, however, innovative and unique. Williamson resisted the natural temptation within the discipline to focus narrowly on specific details; instead adhering tenaciously to a research strategy that allowed him to provide a schematic overview of historical developments operating at broad interregional scales. Probably the closest comparison that could be made to Williamson's survey in approach and scale were the investigations that Adams undertook in southern Mesopotamia and southwest Iran (e.g. Adams, 1965, 1981). While Adams was able to pioneer what has arguably been a more influential approach to subsequent field surveys, his work, like other such projects of its day and like those undertaken since, remained focussed on a single region. In order to find work that replicates the scale of Williamson's investigation, it is necessary to look back to the earlier days of archaeological reconnaissance, and in particular to the investigations of Stein and Hertzfeld (Stein, 1937; 1940[30]). While the full potential of such research has even now probably not yet been realised (Priestman, 2004), the information derived from Williamson's investigation undoubtedly holds many further possibilities for research, primarily due to the fact that it was undertaken using a controlled, self-critical and explicit methodology.

Within the context of southern Iranian and Persian Gulf archaeology, Williamson's survey has a more specific significance. At present there appear to be two major obstacles in the way of an integrated understanding of the long-term development of the Persian Gulf. The first problem is that research undertaken in the region is piecemeal and disconnected, consisting of a range of mostly narrowly defined regional surveys and excavations undertaken with widely divergent methodologies (Wilkinson, 2003: 11). Without a greater degree of integration, it is difficult to consider the undoubtedly

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[30] Herzfeld is known to have carried out extensive surveys in Fars and Western Iran, but the results from this work have never been published, see Note 4, p.24.

important and changing role that the Persian Gulf region played as a single coherent system within the wider context of the historical development of the Indian Ocean. The second more serious problem is the imbalance in research between different areas of the region. Over the last twenty years in particular, there has been a considerable amount of archaeological work undertaken along the Arabian shores of the Persian Gulf and as a result, there is now a reasonably good understanding available for developments in this area. This stands in contrast to the very limited amount of information available for nearly the entire length of the north shore of the Persian Gulf. This situation is clearly reflected in the fact that the most recent major synthesis of long-term development in the Persian Gulf undertaken, *The Arabian Gulf in Antiquity* (Potts, 1990), is dedicated almost entirely to events and regions within Arabia. The fact that such a bias exists justifies remedy, but what makes this bias all the more serious is the fact that the dominant economic and political forces throughout much of the history of the Persian Gulf appear to have come from its northern shores. What the Williamson Collection provides, therefore, is an opportunity to provide an overview of a very broad area within which to set often more detailed, but currently disparate sources of archaeological information previously gathered within southern Iran. In addition, in its own right, the survey provides the first significant source that sheds light on the long-term developments of the north shore of the Persian Gulf and its hinterlands as a whole. Having presented the available data from Williamson's survey, it should now be possible to compare this data with the body of research from Arabia to provide a view of the long-term development of the Persian Gulf and how its constituent elements functioned together as a single coherent system during different periods. This view will undoubtedly provide a closer approximation to events in the past than the currently divergent Persian and Arabian archaeologies of the Gulf that are available today.

Recognising the important scientific potential of the Williamson Collection, this study was undertaken in order make available the evidence that Williamson collected. As has been described in some detail above (Chapters 1 & 2), this study is based on a selection of 17,000 ceramic sherds that Williamson regarded as the most significant material from the surface collections that he made, together with the survey archive, both of which are housed by the Ashmolean Museum in Oxford. In order to use the results from Williamson's survey, significant preparatory work has been undertaken in cataloguing the Collection, developing a comprehensive classification of the pottery, creating a

gazetteer of the sites and undertaking research of the primary archives and available published material.

It is clear that even with the advances that have been made with each of the elements of research undertaken on the Collection, significant gaps in the primary data and in the information on Williamson's work remain, and as a result there must still be some doubt surrounding the credibility of the analysis that has been attempted (Chapters 3 & 4). In the future, it should be possible to address some of the shortcomings that have been identified with the data; for while much of the immediate information has already been utilised, a number of additional sources have been identified as being likely to yield further useful information. These include: 1) the study of finds that Williamson listed on a Card Index of sites in the archive; 2) the study of further primary documents associated with the fieldwork written by Williamson and Prickett that are currently housed at the Peabody Museum in America; 3) revisiting of sample areas within Williamson's survey area in order to carry out field survey aimed at ground-truthing aspects of Williamson's work; 4) and finally the study of portions of the Williamson Collection still housed in Iran.

Each of the areas of future research that have been identified are likely to significantly enhance our understanding of the Collection, and in some cases may change the interpretations that have been derived from it. It is also the case that without pursuing these areas of further investigation, the study of the Williamson Collection remains incomplete. At the same time, what has been achieved is both a comprehensive study of the major portion of the Williamson Collection in the Ashmolean Museum, and a significant start to the detailed record and presentation of the data derived from the Williamson survey as a whole. While these in themselves mark important research objectives, it is ultimately the analysis of the Collection that is important. Based on the current state of knowledge, the analysis that has been attempted can only be considered as preliminary, at the same time however the results that have been obtained from the preliminary analysis (Chapters 3 and 4) do appear in many respects to be coherent, meaningful and consistent with the broad understanding of historical developments in the area, suggesting that despite apparent problems with the Williamson Collection data, the data does provide an accurate reflection of archaeological realities that exist on the ground.

Probably the most significant of the archaeological realities that can be discerned from the analysis of the Williamson Collection is the recurrent contrasts between the Bushehr peninsula and the Minab plain, which appears to be indicative of fundamental differences in the long-term trajectory of development of the Upper and Lower Persian Gulf. This contrast emerges from various types of analysis. Looking at the number of sites occupied in the two areas, they appear to follow opposite long-term trends, with settlement numbers starting high but then declining on the Bushehr peninsula, whereas in the Minab plain they start low and reach a peak towards the end of the sequence. Similar contrasts can be traced through other aspects of the data, with early ceramic imports from Mesopotamia, South Asia and East Asia being more common on sites in the Upper Persian Gulf. Through time, the recipients of foreign trade wares appear to have shifted down within the Persian Gulf, so that by the end of the sequence, there is a very obvious disparity between the proportion of sites receiving East Asian imports at the two opposite ends of the coastal survey.

This restructuring of economic fortunes within the Persian Gulf appears to be linked to a number of different processes. At one level, it is possible to trace the dramatic economic decline of southern Iraq at the head of the Persian Gulf from around the 10th century (Adams, 1965: 84; Wilkinson, 2003: 97). As this process progressed, some of the areas that were most intimately linked with the Mesopotamian system during the height of its prosperity, such as the former Sasanian maritime centre at Bushehr and the settlements in its hinterlands (see Carter *et al*, Forthcoming) fell into dramatic decline, while other areas further down the coastline appear to have been able to capitalise upon the situation, with much of the trading activity and primary production (at least of ceramics) being moved to new centres during the late and post Abbasid periods. Within the ceramic period of the 9th - 11th centuries, one also sees a major restructuring of settlement across the entire survey area, although the process followed alternative courses in different regions. Within the Upper Persian Gulf this appears to have been a time of major settlement collapse, whereas in the Lower Persian Gulf new sites were being founded. In inland areas there appears to be considerable variation, with some areas mirroring the coastal pattern, while others followed independent trajectories.

Another important dimension to the changing economic fortunes within the Persian Gulf is provided by the discussion of East Asian ceramic imports. From the changing

distribution of this material, the pattern of emporia trading within the Persian Gulf is brought sharply into focus. This itself appears to provide the key to understanding the main developments within the region, for as the major emporia shifted over time, this appears to have had a profound affect on the economic fortunes of different sectors of the Persian Gulf coast and its hinterlands. Williamson's research was influential in suggesting that the momentum of Indian Ocean trade increased during the Sasanian period and that the system of emporia trading was already well established by this period. Later, as the major ports of Bushehr fell into decline, one sees what appears to be a related development in the growth of a new trade entrepôt at Siraf situated 220km further down the coast. Closely allayed to the development of this port appears to have been the expansion of commercial contacts within the Indian Ocean, and a new phase of entrepreneurship on the part of merchants sailing directly from the Persian Gulf to long-range destinations including East Asia. With the shift to Siraf, one sees the beginning of a process of long-term 'emporia migration' down the Persian Gulf coast to Kish, and eventually to Hormuz situated at its mouth.

There are clearly many processes involved in the long-term chain of events involved in the shift of fortunes from one economic centre to another, however, they do seem to be symptomatic of the gradual trend towards a growing cross-continental trade within the Indian Ocean, which may have increasingly dictated the location of the main trade emporia within the Persian Gulf. In particular, there may have been an increasing demand through time for an accessible stop-off point closer to the mouth of the Persian Gulf, rather than end destinations capable only of serving the redistributive trade network within the Persian Gulf itself. The scope clearly remains for a more detailed and specific study of these processes, however the study of the Williamson Collection should provide a starting point to an understanding of long-term regional patterns of development, and how they were integrated within the Persian Gulf at different stages.

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LETTERS

No	From	To	Date	Sent From/By
1	Allan, J.	Sumner, W.	18/03/1981	Oxford?
2	de Cardi, B.	Williamson, A.	08/10/1972	London
3	de Cardi, B.	Williamson, A.	20/11/1972	London
4	de Cardi, B.	Williamson, A.	01/01/1973	London
5	de Cardi, B.	Williamson, A.	21/04/1973	London
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7	Darby, J.	Williamson, A.	30/03/1972	Dubai
8	Howard-Johnston, J.	Kennet, D.	07/11/2001	e-mail
9	Humphries, J.	Williamson, A.	05/10/1972	Not stated
10	Humphries, J.	Williamson, A.	20/11/1972	Not stated
11	Humphries, J.	Williamson, A.	13/05/1973	Not stated
12	Insall, D.	Williamson, A.	06/10/1972	Muscat
13	Insall, D.	Williasmon, A.	28/10/1972	Muscat
14	Insall, D.	Williasmon, A.	20/12/1972	Muscat
15	Kamal Hamza	Philips, D.	12/07/1971	Dubai
16	Lamberg-Karlovsky, C.	Williamson, A.	01/11/1972	Cambridge Massachusetts
17	Lamberg-Karlovsky, C.	Williamson, A.	15/03/1973	Cambridge Massachusetts
18	Meadows, R.	Stronach, D.	04/07/1971	Tepe Yahya
19	Philips, D	de Cardi, B.	20/09/1971	Dubai
20	Philips, D.	Williamson, A.	08/12/1971	Dubai
21	Philips, D.	Williamson, A.	15/03/1972	Muscat
22	Prickett, M.	Sumner, W.	31/07/1976	Cambridge Massachusetts
23	Rougeulle, A.	Kennet, D.	24/07/2001	Paris
24	Stronach, D.	Williamson, A.	10/03/1971	Tehran
25	Stronach, D.	Williamson, A.	29/06/1971	Tehran
26	Stronach, D.	Williamson, A.	29/11/1971	Donoch, Sutherland
27	Sumner, W.	Morgan, P. & Leatherby, J.	15/05/1981	Columbus, Ohio
28	Sumner, W.	Kennet, D.	12/08/2002	e-mail
29	Whitehouse, D.	Kennet, D.	10/08/2002	e-mail
30	Williamson, A.	Sumner, W.	19/05/1968	Oxford
31	Williamson, A.	Sumner, W.	21/11/1969	Shiraz
32	Williamson, A.	Pourmand, A.	26/08/1970	Not stated
33	Williamson, A.	Burgess, F.	28/10/1970	Bandar Abbas
34	Williamson, A.	H.E. Mehrad Pahlbod	30/03/1971	Note stated
35	Williamson, A.	Stronach, D.	22/07/1971	Bandar Abbas
36	Williamson, A.	Stronach, D.	01/10/1971	Bandar Abbas
37	Williamson, A.	Philips, D.	27/11/1971	Grimms Hill
38	Williamson, A.	Sarfaraz	09/02/1972	Grimms Hill
39	Williamson, A.	Lamberg-Karlovsky, C.	11/02/1972	Oxford
40	Williamson, A	Philips, D.	13/02/1972	Oxford
41	Williamson, A.	Insall, D.	02/11/1972	Note stated
42	Williamson, A.	Frifelt, K.	18/11/1972	Oxford
43	Williamson, A	de Cardi, B.	18/11/1972	Woodstock
44	Williamson, A.	Lamberg-Karlovsky, C.	18/04/1973	Woodstock
45	Williamson, A.	de Crdi, B.	01/08/1973	Woodstock
46	Williamson, A.	Sumner, W.	12/03/1974	Muscat
47	Williamson, G.I.	Philips, D.	14/12/1971	Grimms Hill

APPENDIX I - CLASS CATALOGUE

Explanation

The sherds in the Williamson Collection have been sub-divided into 'ceramic classes', each of which is identified by a Class Code. An index of the Class Codes together with the full class titles has been placed at the front of the document for ease of reference (p.viii-xi). A discussion of the principles behind the classification and the use of Class Codes has been included within the text (p.47-50). The class catalogue that follows describes the main attributes of each class, together with a consideration of their origin and dating. Most classes are also associated with a fabric and these are described in a separate catalogue (Appendix II). The fabrics are numbered and the corresponding number is placed at the top of the entry for each class within the class catalogue. A skeleton record below explains in more detail the principles behind the other entries within the class catalogue (Fig. 39). A separate 'class identification table' has also been provided that should aid those wishing to identify the Class Code for a particular category of pottery (Table 13).

It should noted that the classification presented below, deliberately builds on Kennet's study of the pottery from the excavations of Kush and al-Mataf in northern Ras al-Khaimah (Kennet, 2004). At the same time, the Williamson Collection study includes the ideas and opinions of the present author, which have been informed in places by significant differences in the material dealt with; for example, a large coarse ware assemblage that differs substantially from that in Ras al-Khaimah, or a much wider array of East Asian pottery. In addition, where necessary, improvements and modifications have been to Kennet's classification. In order to clarify the relationship between the two schemes, a cross-reference has been included within the class catalogue under 'Kennet Class', that gives the equivalent Class Code listed in the Kush/al-Mataf publication (Kennet, 2004) and provides a summary of any further details regarding the relationship between the two systems.

Similarly, the dating for the majority of the local Sasanian and Islamic classes, together with those from southern Mesopotamia and India, is based largely on the seriation of the Kush/al-Mataf sequences (Kennet, 2004: tables 3, 7 & 8), though where other sources have been used where indicated. For all other classes of pottery, the finds were sub-divided into classes by specialists together with the author and given un-referenced spot dates. Most of the Chinese classes where examined by Regina Krahl, the Southeast Asian and some of the south China stoneware by John Guy and the prehistoric classes by Peter Magee, Rémy Boucharlat, Søren Andersen and Robert Carter. A basic designation has also been given for the supposed class origin. None of these class origins have been verified by petrographic analysis. Instead they are based on the informed guesses of the specialists who examined the pottery, or on my own understanding of the distribution of different classes or fabric zones within the Persian Gulf region, based on the Williamson Collection evidence a reference to other ceramic studies.

Skeleton Record

Fabric No: Cross-reference to fabric catalogue, Appendix II

Illustration: Cross-reference to colour plates, Appendix IV

Number of Sherds: Sherds in the Collection

Kennet Class: Cross-reference to the equivalent Class Code listed in the Kush/al-Mataf publication (Kennet, 2004), or an outline of the relationship between Kennet's class and the class as it is defined in the Williamson Collection classification.

Basis of Grouping: The principle factors by which a class is defined (e.g. functional characteristics such as storage jar or amphora; a technical characteristics such as moulded ware or glaze type; stylistic characteristics such as decoration or glaze colour, etc).

Defining Characteristics: The main attributes that allow one to distinguish a class and differentiate it from others.

Coherence: A description of the variation that exists within a class and the extent to which the class can be considered a well-defined coherent entity or an amalgamation of the different categories of material.

Decoration: Description of the general features of surface decoration, including its frequency within the class, the way that it is applied and its style.

Further Information: Additional information that is important to the description or definition of a class that has not been included in any of the other sections.

Form(s)	Description	Rim	Body	Base	H	W	D	T
Form reference code	General vessel description	Shape of rim	Shape of body	Shape of base	Height of vessel	Width at widest point	Diameter of rim	Thickness of sherd

Parallels and Dating: A brief statement outlining the supposed date range of the class and the parallels upon which the date range is based.

Origin: Supposed place of origin based on the opinion of the author and the other specialists who examined various elements of the Collection.

Fig. 39 *Skeleton record explaining of the principles behind each of the entries in the class catalogue.*

CLASS CODE IDENTIFICATION TABLE

Thrown Coarse Ware

Fine Non-Tempered	
Small Vessels	(FINT)
Small Vessels, Thin Walls, Orange Fabric	(FINT.B)
Large Vessels	(FINT.LV)
Large Incised Storage Jars	(LISV.FI)
Hard Clinky Fired Ware with Lime Spalling	
Small Vessels	
Red/Black Lime Spalled	(CLINKY, SMAG.A)
Grey Lime Spalled	(SMAG.B)
Light Creamy Grey	(SMAG.C)
Incised Storage Jars	
Red/Black Lime Spalled	(LISV.A)
Grey Lime Spalled	(LISV.B)
Coarse Temper	(SMAG.RC)
Organic Tempered	
Soft Body	(ORG.S)
Intermediate Body	(ORG.I)
Hard Body	(ORG.H)
Sand Tempered	
Finger Impressed Jars	(HONEY)
Ring Necked Jars	(TORP.1-4)
Other Forms	(TRC.1-2)
Brittle Micaceous	
Red and Black	(IRAB)
Grey	(SBBW)
Fine Black Grit Tempered	
Small Vessels	(FIG)
Large Vessels	(FIG.LV)
Semi-Vitrified	(VITFIG)
Coarse Semi-Vitrified	(CORVIT)
Coarse Grit Tempered Ware	
Small Vessels	(GRIT)
Large Vessels	(GRIT.LV)
Grog Tempered Ware	
Small Vessels	(GROG)
Large Vessels	(GROG.LV)
Hard Lime Tempered	(LIME)
Mixed Non-Identified	
Red Fabric	(CRW.N-ID)
Grey Fabric	(CGW.N-ID)
Cream Fabric	(CCW.N-ID)

Handmade Coarse Ware

Plain	
Shaved and Burnished	
Cream Fabric	(SHABUR.A)
Orange Fabric	(SHABUR.B)

Crudely Built
- Hard Fabric (CHAM.1)
- Intermediate Fabric (CHAM.2)
- Soft Fabric (CHAM.3)
- White Speckled Grey Fabric (SWIS)

Dark Cored
- Cream Surface (WSUQ)
- Black and Red Burnished Surface (REBLAB)

Organic Tempered (ORG.HS)
Large Grit Tempered (LAG)
Figurines (FIGUR)
Non-Identified (HM.N-ID)

Surface Decorated
- Deep Relief, Large Vessels (REL.LV)
- Cross Incised Cordons (CORD)
- Cloth Impressed, Gritty Brown (GIB)

Painted Ware

Cream Fabric
- Fine Fabric (PAW.FC)
- Fine Fabric, Large Vessels (PAW.LV)
- Coarse Fabric (PAW.CC)
- Soft Coarse Fabric (PAW.SCC)
- Soft Creamy Yellow (PAW.SCY)
- Hard Fabric (PAW.HC)
- Organic Tempered (PAW.ORG)

Orange Fabric
- Fine Fabric (PAW.FO)
- Hard Fabric, Black Paint (PAW.BLR)

Brown Fabric
- Brittle Stone Tempered (PAW.BST)
- Sand Tempered (PAW.SA)
- Red on Brown Paint (PAW.RB)

Hard Red Fabric, Slipped and Painted
- Fine Body, Orange/Red Slip, Black Painted (FOPW.1-4)
- Coarse Body, Black Paint (BPCR)
- Brown Slip, Black Paint (SLIP.PBR)

Coarse Laminar Red or Grey Body
- Purple on Black (JUL.PB)
- Red on White (JUL.RW)
- Hard White Flecked (JUL.RC)
- General (JUL)

Non-Identified Groups
- Handmade (HMP.N-ID)
- Wheelmade (WMP.N-ID)

Slipped Ware

Black Slip (SLIP.B)

Red, Orange, Purple, Brown Slip
- Fine Orange Body, Red Orange, Brown or Purple Slip (SLIP.R)
- Hard Orange Body, Burnished Orange Slip (IRPW)
- Fine Slightly Micaceous Orange Body, Orange Slip (FIRE)

Light Grainy Body, Burnished Red Slip	(IRBS)
Thick Orange/Brown Slip	(SLIP.TB)
Incised and Impressed Ware	(WINC, INCIMP)
Moulded Ware	
Orange Fabric	(MEW.O)
Fine Cream Fabric	(MEW.C)
Coarse Cream Fabric	(MEW.CC)
Brown Fabric	(MEW.BR)
Dark Grey Fabric	(MEW.DG)
Light Grey Fabric	(MEW.LG)
Moulded Ware Wasters	(MEW.MF)
Moulds	(MEW.MO)
Blue/Green Alkaline Glaze	
General Turquoise	(ALK.1)
Olive Green	(ALK.2)
Dark Turquoise Including Appliqué	(ALK.3)
Opaque 'Tin' Glaze	
Monochrome Glaze	
White Glaze	
Cream Body	(TIN.W1)
Orange Body	(TIN.W2)
Blue Glaze	(TIN.B)
Turquoise Glaze	(TIN.T)
Trailed Cobalt Blue on White	(TIN.CT)
Splashed Turquoise & Black	(TIN.TBS)
Lustre	
Monochrome (Gold)	(TIN.ML)
Polychrome, (Gold, Copper, Ruby)	(TIN.PL)
Non-Identified Groups	(TIN.N-ID)
Lead Glaze	
Splashed Glaze	
Polychrome Splashed Glaze	(SPL.P)
Bichrome Splashed Glaze	(SPL.GW)
Late Splashed Glaze	(SPL.L)
Sgraffiato	
Early Polychrome	(GRAF.EP)
Hatched	(GRAF.H)

Champlevé	(CHAMP)
Late Polychrome	(GRAF.LP)
Two Tone	(GRAF.B)
Deeply Incised	(GRAF.DI)
Painted and Incised	(GRAF.S)
Monochrome	
Green	(GRAF.G)
Yellow	(GRAF.Y)
Mustard	(GRAF.M)
Thin Lined Incision, Degraded Glaze	(GRAF.TL)
Degraded	(GRAF.D)
Non-Identified	(GRAF.N-ID)
Sgraffiato Related Monochrome	
Green	(MONO.G)
Yellow	(MONO.Y)
Slip Painted Ware	
Yellow, Brown and Green	(SPW.YB)
White and Black on Brown	(SPW.BG)
Brown on White	(SPW.BW)
Non-Identified Groups	(SPW.N-ID)
Underglaze-Painted Ware	
Purple, Turquoise and Black on White	
Weathered Glaze, Black Paint Only	(MGP.1)
Fused Paint and Glaze	(MGP.2)
Glossy Glaze	(MGP.3)
Blue, Black and Turquoise on White	
Glossy Glaze	(UGP.G1)
Fine Cream Body	(UGP.F2)
Coarse Body	(UGP.C2)
Red Sandy Body	(UGP.BW)
Black on Turquoise	
Glossy Glaze	(UGP.G2)
Fine Body	(UGP.F1)
Coarse Body	(UGP.C1)
Black Paint, Clear Glaze	(UGP.TTB)
General Non-Identified Groups	(UGP.GEN)
Other Types	
Blue/Green Glaze	
Appliqué Decorated	(ALK.RC)
Stippled Blue/Purple/Green	(PERSIA.1-2)
Hard Grey Body with Orange Spots	(KHUNJ)
Mixed	(GREG)
Incised Red Slip, Clear or Turquoise Glaze	(REDYEL)
Yellow Glaze, Brown Paint	(YEMEN)
Yellow Speckled Glaze	(YSPEC)
Red Body, Thick Cream Glaze	(CREAM)
White past, transfer printed or painted	(CHIN)
Glazed Tiles	
Monochrome Turquoise Glaze	(GT.1)
Monochrome Cobalt Blue Glazed	(GT.2)
Monochrome White Glaze	(GT.3)
Copper Lustre on White	(GT.4)
Cobalt Blue and Black on White	(GT.5)
Degraded and Non-Identified Glazed Ware	(GLAZ.DEG, GLAZ.N-ID)

Kiln Debris

Trivets	(KD.1)
Bars	(KD.2)
Clinker & Slag	(KD.3)
Wasters	(KD.4)

Frit or Stonepaste

Monochrome	
Turquoise	(FRIT.T)
Blue	(FRIT.B)
Purple	(FRIT.P)
White	(FRIT.W)
Green (Celadon Imitation)	(FRIT.G)
Incised Monochrome	
Turquoise	(FRIT.IT)
White	(FRIT.IW)
Moulded	
Turquoise	(FRIT.MT)
White	(FRIT.MW)
Underglaze Painted	
Blue, Black & White	(FRIT.BW)
Turquoise & Black	(FRIT.TB)
Turquoise and Blue	(FRIT.TBU)
Green & White	(FRIT.GW)
Enamel Imitation	(FRIT.EI)
Lustre	
Gold on White	(FRIT.L)
Gold on Blue	(FRIT.BL)
Degraded	(FRIT.DEG)

High Fired Ware

Grey Stoneware	
Celadon	
Longquan	(LQC.1-4)
Guangdong	(GDC.1-4)
Jingdezhen	(JDC)
Green Glaze	
South China	(DUSUN)
Burmese	(STO.BUR)
Thai	(STO.THAI)
European	(STO.EU)
Non-Identified Groups	(STO.N-ID)
Clear Glaze	(STO.GRY)
Iron Glaze	(MTB.1-2, IGSJ, LIB, DAB)
White stoneware	
Painted	(CHANG)
White Slip	(WWSL)
Splashed Green	(GWSG)
Black & White, Painted & Incised	(CIZHOU)
Miscellaneous	(FE.N-ID)

Porcelain	
White Ware	
Fujien	(WWF)
Guangdong	(WWG.1-3)
Jingdezhen	(WWJ.1-4)
Dehua	(DEH.1-2)
Qingbai	(QING.1-2)
South China General	(WWS.1-10)
Unprovenanced	(WW.0-5)
Blue and White	
Chinese	(CBW.1-45)
Vietnamese	(VBW.1-2)
Enamelled	(ENAM)

Table 13 *Class identification table.*

1. CLINKY (Clinky Fired Earthenware)

Fabric No: 5, 1 **Illustration:** Plate 11 **Number of Sherds:** 112

Kennet Class: CLINKY.

Basis of Grouping: Form and fabric.

Defining Characteristics: Simple 'S' profile rims on a body that is typically hard, well-oxidised and dense with a 'clinky' feel and some lime spalling. There are also some thinner walled examples with partially reduced bodies, which have a fabric more similar to SMAG.A.

Coherence: The form and fabric of CLINKY is consistent and readily recognisable, although the same form is also found on other more varied fabrics at the edge or outwith the definition of the class.

Decoration: Fine incised bands around shoulder or plain.

Further Information: The distinction between CLINKY and SMAG.A is sometimes difficult. It is tempting to treat CLINKY as a further sub-division of form within the broader SMAG/CLINKY/LISV tradition, however the CLINKY fabric, although similar to SMAG.A, tends to be finer with less evidence of lime spalling. In the light of these differences and the chronological separation of the two groups revealed through the sequence at Kush (Kennet, 2004: 62, table 3), it appears that the two classes may mark different stages in the transformation of a single industry over time. Although the median point between the two groups cannot always be strictly defined, for the purposes of analysis it should still be acceptable to regard CLINKY as a coherent entity.

Form(s)	Description	Rim	Body	Base	H	W	D	T
CL: 01	Simple 'S' profile rimmed jars	As before	Rounded	Flat	c.11 - 20cm	c.13 - 19cm	8 - 14cm	0.4 - 0.6cm
CL: 02	'S' profile rimmed jars with notch	As before	Rounded	Flat	c.9 - 20cm	c.13 - 24cm	10 - 14cm	0.5 - 0.7cm

Parallels and Dating: Initial dating for the class was provided by the lower fill of Pit 7 within the Area 3 section recorded during the 1992 Khatt Survey (Kennet, 1998: 111, fig. 5, 11-12, fig. 6, 19). This context, which was dated to the 4th - 5th centuries based on ceramic associations, was used to distinguish the class from the later SMAG development witnessed in the upper fill of Pit 7 (Kennet, 1998). At Kush CLINKY occurs in abundance particularly within Phases W-01 - E-01 dated to the 4th/5th - 6th centuries (Kennet, 2004: 62, table 3).

Origin: Southern Iran?

2. SMAG.A (Small Grey Vessels, Group A)

Fabric No: 1 **Illustration:** Plates 8-10 **Number of Sherds:** 441

Kennet Class: Kennet's SMAG class has been sub-divided into a range of related classes in the Williamson classification. SMAG at Kush is equivalent to this more heavily sintered red and black version (SMAG.A) rather than to the reduced grey version (SMAG.B).

Basis of Grouping: Fabric.

Defining Characteristics: Hard 'clinky' fired earthenware with a tight slightly metallic surface and frequent lime spalling producing small voids surrounded by light yellow 'haloes'. Fired predominantly to a dark grey or red. Vessels include a wide range of forms. Pronounced throwing lines are common, especially on the interior.

Coherence: Although there is some variability suggesting different but closely related industries, there is a prevailing uniformity in the fabric across the various vessel forms.

Decoration: Some vessel types have raised bands around the neck area with notching and wavy bands incised below, but these are far less common than plain vessels. Large jars are most often decorated with wavy bands.

Further Information: The central core of SMAG.A is very consistent though there is a continuum between the class and LISV.A. There are also a number of related sub-classes within the group that differ in aspects of form and fabric. It is more difficult to see what relationship exists between these sub-groups and classic SMAG.A.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SM.A: 01	Open bowls	Simple or rolled & flattened	Upright & straight sided	Flat?	c.12 - 15cm	19 - 27cm	19 - 27cm	0.5 - 1.25cm
SM.A: 02	Jugs	Complex banded necks, rolled & flatted rims	Straight neck & rounded body	Flat?	c.13 - 21cm	c.9 - 14cm	c.7 - 10cm	c.0.3 - 0.6cm
SM.A: 03	Jars & deep closed bowls	Fattened, faceted, bevelled & others	Rounded	Flat?	c.9 - 30cm	c.13 - 19cm	10 - 17cm	0.5 - 0.9cm
SM.A: 04	Closed collar bowls	Simple slightly fattened	Rounded & closed, collar protruding from shoulder	Flat?	c.13cm	c.18cm	13cm	0.4 - 0.6cm

Parallels and Dating: The class was initially defined and dated by its occurrence in Layer 5 of the Area 3 section opened during the 1992 Khatt survey, which is later in the sequence than Pit 7 which has been dated to the 4th - 5th centuries (Kennet, 1998: 111, fig. 5, 5, fig. 6, 20-1). At Kush a significant body of SMAG.A occurs between Phases W-04 - E-07 although it is likely to be residual above Phase E-04 and thus to have been in circulation between the 7th - 9th centuries (Kennet, 2004: 62, tables 3 & 41).

Origin: Southern Iran?

3. SMAG.B (Small Grey Vessels, Group B)

Fabric No: 2 **Illustration:** Plate 12 **Number of Sherds:** 193

Kennet Class: SMAG (see notes related to SMAG.A above).

Basis of Grouping: Fabric.

Defining Characteristics: Hard 'dry' grey fabric with a wide but specific range of vessel forms. The fabric displays some lime spalling, though generally less than Fabric 1 groups and usually without the yellow 'halo'. The surfaces are mostly lightly smoothed internally and externally. Throwing marks are much less pronounced than they are on SMAG.A.

Coherence: Coherent with a wide range of forms.

Decoration: Most vessels are plain. Some have notched grooves around the neck and a few body sherds have complex incised decoration comprised of chevrons, grids and girdles.

Further Information: There is no precise division between SMAG.B and SMAG.A though the differences are consistent enough to consider SMAG.B as a separate entity. At the same time, the two groups are clearly related sharing a similar wide range of vessel forms including the LISV counterparts. It seems likely that the major difference between the Fabric 1 and 2 groups is a difference of firing atmosphere, though this does not appear to arbitrary. In fact, the consistency of the division suggests that there might be a geographic or temporal dimension to their separation.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SM.B: 01	Open bowls	Simple, fattened or everted & squared	Upright & straight sided	Flat?	c.10 - 13cm	26 - 29cm	26 - 29cm	0.5 - 0.7cm
SM.B: 02	Closed angular rimmed bowls	Angular 'T' form	Upright profile	Flat?	c.8 - 20cm	c.16 - 29cm	17 - 30cm	0.4 - 1.1cm
SM.B: 03	Closed rounded rimmed bowls	Everted & rounded	Rounded	Flat?	c.7 - 9cm	c.12 - 17cm	11 - 15cm	0.3 - 0.6cm
SM.B: 04	Broad based jars	Barb shaped	Narrow at neck, broadest below waist	Flat?	c.13 - 23cm	c.22 - 32cm	14 - 26cm	0.5 - 0.8cm
SM.B: 05	Small ring necked jars	Rounded, multiple ring below rim	Upright sides	Flat?	c.9 - 14cm	c.8 - 14cm	7 - 12cm	0.4 - 0.6cm
SM.B: 06	Small barbed rimmed jars	Barbed or triangular	Sharp shoulders, rounded body	Flat?	c.10 - 20cm	c.15 - 22cm	11 - 18cm	0.3 - 0.7cm
SM.B: 07	Collar rimmed jars	Fattened of thinning vertical collar	Shouldered	Flat?	c.12 - 25cm	c.14 - 23cm	11 - 19cm	0.3 - 0.5cm
SM.B: 08	Heavy rimmed jars	Fattened and everted	Narrow at neck expanding below	Flat?	c.19 - 26cm	c.15 - 37cm	12 - 35cm	0.6 - 1.1cm
SM.B: 09	Thin walled goblets & bowls	Simple	Angular profile with high carination	Flat?	c.10 - 11cm	c.10 - 15cm	10 - 12cm	0.3 - 0.5cm
SM.B: 10	Jugs	Everted with a pointed lip	Rounded body, strap handle attached at or below rim	Flat?	c.24 - 32cm	c.17 - 22cm	11 - 20cm	0.4 - 0.6cm
SM.B: 11	Flat 'fish dishes'	Upturned & rounded	Open & flat	Flat	1.5 - 1.8cm	19 - 20cm	19 - 20cm	0.4 - 1.2cm

Parallels and Dating: The sub-division of SMAG.A and B was not made in the Kush classification and most of the SMAG was attributed to the 7th - 9th centuries. SMAG.B may also belong to the same period however evidence from Qala'at al-Bahrain (Andersen pers. comm. 16/07/2003) as well as from the 2004 Bushehr Hinterland Survey (Carter *et al*, Forthcoming), suggests that the class may be dated earlier to the c.3rd - 6th centuries although further work is needed in order to confirm this impression.

Origin: Southern Iran?

4. SMAG.C (Small Grey Vessels, Group C)

Fabric No: 4 **Illustration:** Plate 13 **Number of Sherds:** 61

Kennet Class: None.

Basis of Grouping: Fabric and forms.

Defining Characteristics: Small, thin walled vessels with complex rims and a fine light cream coloured fabric. Exterior surfaces are typically though not always blackened with the interior and core remaining pale.

Coherence: Coherent and readily recognisable.

Decoration: Mostly plain but some vessels have lightly incised bands around the shoulder and SM.C: 03 has raised carinations.

Further Information: The group conforms to the general description of small grey vessels, especially those with complex rims, however the fabric this is clearly distinct from SMAG.A and SMAG.B and belongs to a separate production.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SM.C: 01	Small rounded rimmed jars	In-turned rounded collar form	Rounded	Flat?	c.13 - 15cm	c.8 - 14cm	6 - 12cm	0.3 - 0.6cm
SM.C: 02	Small jars with everted rims	Everted & barbed	Rounded	Flat?	c.10 - 12cm	c.12 - 13cm	11 - 12cm	0.3 - 0.4cm
SM.C: 03	Small carinated jars	Vertical or everted lip	Carinated & angular	Flat?	c.10 - 14cm	c.12 - 16cm	10 - 14cm	0.2 - 0.4cm

Parallels and Dating: Evidence from the 2004 Bushehr Hinterland Survey suggests that SMAG.C can be attributed generally to the Hellenistic period of the 2nd century BC - 3rd century AD although further work is needed in order to confirm this impression (Carter *et al*, Forthcoming).

Origin: Southern Iran?

5. SMAG.RC (Small Grey Vessels, Related Class)

Fabric No: 3 **Illustration:** Plate 14 **Number of Sherds:** 184

Kennet Class: Some of the large SMAG.RC pieces (SM.R: 03) would be included within Kennet's generic LISV class.

Basis of Grouping: Fabric and particular forms.

Defining Characteristics: Coarse, predominantly reddish-brown fabric with variegated colours including yellowish-white flecks, lime spalling and often, frequent shiny black platelets. A high proportion of pieces have some traces of brown or black slip, which is usually badly degraded, but where it does survive it covers all surfaces and provides a dark matt finish. The class can be distinguished from SLIP.B by the coarseness of the fabric although there are some finer pieces, especially in SM.R: 02.

Coherence: All three vessel forms seem to be a part of the same fabric group, although there is a clear tendency for heavier vessels to be more coarsely tempered.

Decoration: Smaller vessels are all plain though pronounced throwing rings are common on the interior and exterior surface. Larger vessels can be plain or have various forms of incised decoration including complex criss-cross designs across the shoulder.

Further Information: Some of the features of this class such as the lime inclusions, hard firing, shiny black platelets and a number of the forms suggest that it is related to the SMAG/LISV.A/B groups. In SM.R: 03 there are certainly LISV elements. In SM.R: 01 and 02 there are also close parallels of form with SMAG.A and B. At the same time there are links between this class and other coarse ware groups such as GRIT, GRIT.LV and a class not differentiated here, referred to as CHOC in the Kush classification (Kennet, 2004: 59-60).

Form(s)	Description	Rim	Body	Base	H	W	D	T
SM.R: 01	Open bowls	Plain of everted	Upright & straight sided	Flat?	c.8 - 16cm	15 - 30cm	15 - 30cm	0.6 - 0.9cm
SM.R: 02	Thin walled jars	Wide range mostly everted	Mostly rounded & shouldered	Flat? & foot rings	c.10 - 17cm	c.13 - 20cm	11 - 18cm	0.3 - 0.7cm
SM.R: 03	Heavy jars & deep bowls	Wide range, complex, everted, some rilled	Rounded often shouldered	Flat?	c.47 - 85cm	c.26 - 46cm	18 - 38cm	0.5 - 1.9cm

Parallels and Dating: Evidence from the 2004 Bushehr Hinterland Survey indicates that SMAG.RC belongs to the Sasanian and Early Islamic, pre-Samarra horizon period or the c.4th - 9th centuries but further work is needed in order to confirm this impression (Carter *et al*, Forthcoming).

Origin: Southern Iran?

6. LISV.A (Large Incised Storage Vessels, Group A)

Fabric No: 1 **Illustration:** Plate 1 **Number of Sherds:** 123

Kennet Class: Kennet's LISV class has been sub-divided in the Williamson classification into three different groups. LISV.A has the same fabric as SMAG.A; LISV.B has the same fabric as SMAG.B, and LISV.FI represents an independent group of fine-bodied LISV with very few coarse inclusions. There are also pieces that would be included in Kennet's generic LISV class within some of the coarse ware classes including: SMAG.RC, FINT.LV, FIG.LV, GRIT.LV, GROG.LV, ORG.H, ORG.I and ORG.S.

Basis of Grouping: Fabric & vessel category.

Defining Characteristics: Thick walled, heavy rimmed jars and deep closed bowls, usually embellished with incised wavy bands and elaborations of the rim.

Coherence: The basic functional concept and fabric type are coherent, however there is a very wide range of specific vessel forms and rim types within this class.

Decoration: Incised bands, wavy lines, dots and forms of rustication below the rim. There are also many examples where the vessel surface is left plain, particularly on those with simpler rim types.

Further Information: The respective groups of LISV form a large element in the collection and one that is particularly difficult to define closely. LISV.A represents one of the more coherent elements of the group based on the general uniformity of fabric and the obvious continuum between the fabric of LISV.A, SMAG.A and CLINKY.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LI.A: 01	Deep jars & bowls	Heavy, fattened & protruding	Various closed	Flat?	c.56 - 100cm	c.54 - 76cm	30 - 66cm	0.6 - 2.2cm
LI.A: 02	Tall necked jars	Rolled	Straight neck and rounded body	Flat?	c.45 - 58cm	c.38 - 40cm	20 - 22cm	0.5 - 1.4cm

Parallels and Dating: Recovered from Layer 5 in the Area 3 section opened during the 1992 Khatt survey, which occurs later in the sequence than Pit 7 that belongs to the 4th - 5th centuries (Kennet, 1998: 111, fig. 5: 6). At Kush LISV occurs in all levels but appears particularly concentrated in Phases E-03 - E-04 dated to between the 7th - 9th centuries (Kennet, 2004: 58, table 3). At Qasr-i Abu Nasr LISV occurs mostly in the fortress area (Whitcomb 1985: 111, fig. 40-42).

Origin: Southern Iran?

7. LISV.B (Large Incised Storage Vessels, Group B)

Fabric No: 2 **Illustration:** Plate 2 **Number of Sherds:** 57

Kennet Class: LISV (see notes related to LISV.A above).

Basis of Grouping: Fabric and vessel category.

Defining Characteristics: Similar to LISV.A except that the fabric is a more consistent grey and is dull with a less melted appearance than Fabric 2.

Coherence: Reasonably coherent although there is an extensive range of forms and some variation in the refinement and firing of the fabric suggesting more than one production.

Decoration: Some vessels left plain but most have incised wavy lines, straight bands, dots and other types of surface rustication just below the rim.

Further Information: Much time was spent attempting to sub-divide the respective groups within LISV. Some of the sub-groups, particularly this one, are not altogether satisfactory. This seems to be a characteristic of the class, despite there being a relatively large sample of LISV in the Williamson Collection, the class continues to display a seemingly endless range of variation in form and fabric. Only with a very large sample would it perhaps be possible to ascertain the full extent of variation within the class.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LI.B: 01	Large jars & deep closed bowls	Fattened & everted, often complex	Deep & rounded	Flat?	c.36 - 90cm	c.24 - 110cm	19 - 110cm	0.5 - 1.8cm

Parallels and Dating: May have the same dating as LISV.A although links with SMAG.B and evidence from Qala'at al-Bahrain suggest that this may belong to an earlier c.3rd - 6th century tradition (Personal observation and Andersen pers. comm. 16/07/2003).

Origin: Southern Iran?

8. LISV.FI (Fine Bodied Large Incised Storage Vessels)

Fabric No: 6 **Illustration:** Plate 3 **Number of Sherds:** 27

Kennet Class: LISV (see notes related to LISV.A above).

Basis of Grouping: Fabric and vessel category.

Defining Characteristics: LISV with fine, non-tempered, hard evenly oxidised fabric. The walls tend to be of an even thickness and the forms more squared than other LISV types. Almost all vessels are decorated with deep incising.

Coherence: Reasonably coherent, although close inspection of fabrics suggests that there is some variability and there are no decisive factors to unite the group, aside from the difference between this material and other elements of the LISV group.

Decoration: Thick wavy bands below the rim sometimes combined with straight bands, notches and dots, all applied while the vessels remained soft.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LI.FI: 01	Large, necked jars	Everted, faceted or rounded	Straight neck, shoulders & rounded body	Flat?	c.40 - 62cm	c.30 - 88cm	22 - 68cm	0.9 - 1.7cm

Dating: Probably dated to the same period as the other LISV, which appears to be concentrated between the 7th - 9th centuries (see above).

Origin: Southern Iran?

9. GRIT (Coarse Grit-Tempered Ware)

Fabric No: 9 **Illustration:** Plate 15 **Number of Sherds:** 193

Kennet Class: None.

Basis of Grouping: Fabric

Defining Characteristics: Coarse, mostly worn sub-rounded black grit inclusions and a dense un-sintered fabric. Colour range is wide but mostly evenly oxidised. Vessels are generally medium sized with thick walls.

Coherence: Currently a rather disparate class that probably includes a number of different independent productions (see below).

Decoration: Predominantly plain, though some have incised bands, wavy bands or raised cordons with vertical or oblique notching.

Further Information: There are some similarities between GRIT and SMAG.RC. Parallels also exist between one of the forms (GR: 04) and the WAPO class at Kush (Kennet, 2004: 64). In fact the whole class may need to be revised (together with GRIT.LV) as there appear to be at least three groups represented including a hard well-sintered orange-firing group with particularly large grits; a group that is softer, light cream coloured and has better sorted finer grits; and a very soft, grit and chaff tempered light yellow fabric.

Form(s)	Description	Rim	Body	Base	H	W	D	T
GR: 01	Open bowls	Simple or everted fattened & rounded	Both shallow & deep types	Flat	c.11 - 25cm	17 - 34cm	17 - 32cm	0.4 - 1.2cm
GR: 02	Deep closed bowls & heavy rimmed jars	Fattened & everted, wide range of types	Upright & broad-bellied	Flat	c.19 - 30cm	c.15 - 42cm	9 - 38cm	0.7 - 1.5cm
GR: 03	Thin walled 'S' profile jars	Simple 'S' profile	Shouldered & rounded	Flat	c.16 - 19cm	c.19 - 22cm	14 - 16cm	0.5 - 0.6cm
GR: 04	Small closed jars (WAPO type)	Simple slightly fattened & rounded	Rounded & broad below waist	Flat	c.17 - 19cm	c.21 - 22cm	11 - 15cm	0.5 - 0.9cm
GR: 05	Rilled necked jars	Simple straight rilled neck	Shouldered with rounded body	Flat	c.18cm	c.24cm	10cm	0.9cm

Parallels and Dating: Not known.

Origin: Southern Iran?

10. GRIT.LV (Large Grit-Tempered Vessels)

Fabric No: 9 **Illustration:** Plate 4 **Number of Sherds:** 113

Kennet Class: Some of the GRIT.LV pieces (LVG: 03) would be included within Kennet's generic LISV class.

Basis of Grouping: Fabric, vessel forms and vessel size.

Defining Characteristics: Heavy thick-walled vessels, all with a regular coarse grit temper as seen in the smaller vessels belonging to the same fabric. Most of the grit is black, though other elements are also present.

Coherence: Some variation in the levels, size and sorting of the coarse inclusions. In the larger vessels it is not easy to maintain a distinction between sand and grit tempered vessels. With other aspects of fabric, including matrix composition, hardness and general appearance, the group does hold together, especially when compared against other heavy coarse ware classes. Of all the forms within the class LVG: 03 is by the far the most disparate.

Decoration: Forms LVG: 01-02 are entirely plain, whereas LVG: 03 is really a sub-class of LISV with heavy incised jabs, dots and wavy bands below the rim, though plain examples area also represented within the form. Form LVG: 04 has a rilled neck and LVG: 05 can be plain or more often incised.

Further Information: Similarities exist between the fabric in this class and those of GRIT/GRIT.LV and GROG/GROG.LV. Close parallels exist between the forms of this class and GROG.LV and FINT.LV as well as other LISV classes.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LVG: 01	Simple heavy bowls	Simple, slightly fattened, erring on 'T' form	Mostly steep sided	Thick & flat	c.15 - 40cm	31 - 74cm	31 - 74cm	1 - 2.5cm
LVG: 02	Narrow necked 'pithoi' forms	Barbed, fattened & flattened	Wide shouldered, globular	Flat	c.40 - 70cm	c.58 - 84cm	18 - 24cm	1 - 2cm
LVG: 03	LISV heavy thick walled jars & bowls	Wide range of fattened, everted, 'T' form	Upright	Flat	c.40 - 70cm	c.68 - 94cm	18 - 78cm	1 - 2cm
LVG: 04	Rilled necked handled jars	Straight rilled neck	Shouldered rounded	Flat	c.21 - 23cm	c.27 - 33cm	13 - 15cm	0.5 - 0.7cm
LVG: 05	Flat 'fish dishes'	Up turned, squared or slightly fattened	Open & flat	Flat	2 - 4cm	30 - 44cm	30 - 44cm	1.5 - 2.3cm

Parallels and Dating: Not known.

Origin: Southern Iran?

11. FIG (Fine Grit-Tempered Ware)

Fabric No: 7 **Illustration:** Plate 16 **Number of Sherds:** 336

Kennet Class: None.

Basis of Grouping: Fabric.

Defining Characteristics: Regular well sorted, finely graded sandy inclusions in a compact oxidised body. The class includes a wide range of small or medium sized vessels, most of which are closed forms as well as a distinctive deep carinated bowl with a sand covered lower portion (FI: 07). One form, FI: 03, includes examples of Kennet's WAPO class but also covers some larger vessels (Kennet, 2004: 64).

Coherence: High level of coherence within the fabric and specific forms well represented.

Decoration: A small proportion of vessels have broad, shallowly incised straight and/or wavy bands.

Further Information: FIG and FINT are very similar in their appearance and they share a number of the same forms, although there are a few forms that are restricted exclusively to FINT. The distinction between these two classes is probably arbitrary but has been drawn based on the frequency of fine, black, sandy inclusions.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FI: 01	Barbed rimmed jars	Fattened & folded, 'barb' shaped	Wide shouldered & rounded	Flat?	c.24 - 17cm	c.24 - 27cm	13 - 15cm	0.5 - 1.1cm
FI: 02	Small dumpy jars	Fattened, rolled & folded bobble	Wide shouldered & rounded	Flat?	c.16 - 28cm	c.17 - 32cm	9 - 24cm	0.4 - 1.1cm
FI: 03	Rolled rimed jars, includes WAPO form	Rolled, some with notching on exterior	Upright & rounded	Flat?	c.13 - 33cm	c.19 - 46cm	17 - 42cm	0.5 - 0.9cm

FI: 04	Necked jars	Various everted, simple & fattened	Shouldered & rounded	Flat?	c.15 - 22cm	c.13 - 20cm	11 - 14cm	0.3 - 1.2cm
FI: 05	Open bowls	Simple, everted, 'T' form, others	Medium to shallow	Flat?	c.11 - 17cm	13 - 33cm	11 - 31cm	0.4 - 1.4cm
FI: 06	Pedestals, *'Gopal'*	Not clear	Not Clear	Flat or concave pedestal	c.8cm	6.5 - 7.5cm	6.5 - 7.5cm	0.6 - 1.5cm
FI: 07	Carinated bowls	Simple, fattened or everted	Steep upper portion, concave sand covered walls below the carination	Flat	c.10 - 20cm	c.20 - 33cm	18 - 31cm	0.6 - 1.7cm

Parallels and Dating: Recent survey in the Rudan area identified a single-period Iron Age site (PK15) with large quantities of FIG together with a range of typical Iron Age type fossils (Kennet, Priestman, Khosrozadeh & Aali, Forthcoming). This corresponds with the dating of one of the types, a carinated bowl (FI: 07) that has been identified as a common Central Asian type, painted examples of which occur in Late Bronze Age/Early Iron Age Period II levels at Tepe Yahya (Magee, pers. comm. 15/07/2002). The whole class is probably dated to the same period.

Origin: Although there was no direct evidence for the production of FIG at PK15, the homogenous nature of the assemblage and the sheer quantity of the class, suggested that it was manufactured locally possibly within the area of PK15 itself.

12. FIG.LV (Fine Grit-Tempered Ware, Large Vessels)

Fabric No: 7 **Illustration:** Plate 5 **Number of Sherds:** 51

Kennet Class: Some of the FIG.LV pieces (LVFG: 01) would be included within Kennet's generic LISV class.

Basis of Grouping: Fabric, vessel forms and size.

Defining Characteristics: As with FIG, the larger vessels have well-sorted, fine, sandy inclusions in abundance within a compact, well-oxidised body. In this case, the vessels are large, thick walled, heavy rimmed types including LISV, 'pithio' forms, other jar forms and bowls.

Coherence: Coherent.

Decoration: Forms LVFG: 01-02 are either plain or have incised wavy or straight bands below the rim. Other forms are plain.

Further Information: Similarities exist in the form of FINT.LV and GRIT.LV. In terms of fabric, it is not always easy to make a clear distinction between FIG.LV, FINT.LV, GRIT.LV and the organic tempered classes.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LVFG: 01	Thick walled heavy jars, LISV	Fattened, everted & sometimes faceted	Fairly upright, slightly rounded	Flat	c.45 - 80cm	c.44 - 77cm	32 - 62cm	0.9 - 2.5cm
LVFG: 02	'Pithoi' type narrow necked storage jars	Everted folded & flattened, 'barb' shaped	Wide shouldered & bulbous	Flat?	c.35 - 60cm	c.42 - 90cm	17 - 31cm	0.7 - 2.2cm
LVFG: 03	Open & closed bowls	Simple or 'T' form	Shallow or steep	Flat, slightly concave	5 - 7cm	40 - 42cm	26 - 42cm	1.5cm
LVFG: 04	Flat 'fish dishes'	Slightly up turned	Open flat	Flat	1 - 2cm	20 - 26cm	20 - 26cm	0.7 - 1.4cm

Parallels and Dating: The similarity of FIG.LV to FIG suggests that they are part of the same manufacturing tradition and should therefore be dated to the same period.

Origin: Southeast Iran.

13. VITFIG (Semi-Vitrified Fine Grit-Tempered Ware)

Fabric No: 14 **Illustration:** Plate 20 **Number of Sherds:** 169

Kennet Class: None.

Basis of Grouping: Fabric and firing.

Defining Characteristics: Finely gritted, semi-vitrified material with soapy surface. Usually fired to a light pinkish red, but some sherds are reduced or have reduced cores.

Coherence: A very coherent group, easily identifiable although some pieces are only slightly vitrified and so can be difficult to differentiate from FIG.

Decoration: Most types are plain though one medium thick closed jar form (VF: 02) has complex incised and stamped decoration including horizontal ribbing and whipped cord marks.

Further Information: It is difficult to tell if this class represents an intended production tradition. The consistency of the semi-vitrification and the concomitant colour and fabric quality produced over a wide range of forms and across a substantial selection of sherds suggest that it is. On the other hand, the material looks rather over-fired and melted. Certainly some material is beginning to bloat, especially the heavily reduced pieces that have entered an advanced state of vitrification. In addition, there are sherds that are only slightly melted that are difficult to distinguish from FIG, a class that shares many of the same forms. The presence of fine grit in both these classes and the transitional sherds that have been described, suggests that both may in fact belong to the same class, but that VITFIG has suffered from the effect of over-firing. This suggestion is born out to a certain extent by the fact that VITFIG almost all comes from a single site S11, one of the sites within the Sirjan Survey, which may, in the light of this material, have been a production centre for FIG.

Form(s)	Description	Rim	Body	Base	H	W	D	T
VF: 01	Small to medium sized open bowls	Everted, flattened & squared	Mid-depth	Flat	c.10 - 20cm	16 - 44cm	16 - 44cm	0.5 - 1.4cm
VF: 02	Small to medium sized decorated jars	Mostly necked, everted & squared, simple or 'barbed'	Rounded shoulders, some with raised cordons	Flat	c.12 - 25cm	c.11 - 36cm	5 - 22cm	0.4 - 1.7cm
VF: 03	Thick walled heavy bowls & jars	Mostly simple or squared	Straight sided	Flat	c.23cm	34 - 44cm	34 - 44cm	1.5 - 2.7cm

Parallels and Dating: Not known.

Origin: Sirjan area?

14. CORVIT (Coarse Semi-Vitrified Ware)

Fabric No: 16 **Illustration:** Plate 19 **Number of Sherds:** 10

Kennet Class: None.

Basis of Grouping: Fabric and firing treatment.

Defining Characteristics: Similar and possibly the same as VITFIG but much more roughly pitted and less gritty. The pieces are all thick-walled, apparently press-moulded and possibly from the same object. Most pieces are so flat that it is difficult to determine whether they are tiles, parts from a very large vessel, or components in a heavy ceramic installation such as a fired clay oven of kiln.

Coherence: Similar enough to be from the same object or set of identical objects.

Decoration: Mostly plain, though some pieces have fine ridge like elements raised in relief and forming geometric configurations that might be decorative, a product of their manufacture or an aspect of their function, i.e. keying ribs.

Further Information: The pieces are from the same site as most of VITFIG and are probably closely associated.

Form(s)	Description	Rim	Body	Base	H	W	D	T
CV: 01	Large slabs	Simple rounded ends	N/A	N/A	N/A	N/A	N/A	2.7cm

Parallels and Dating: Not known.

Origin: Sirjan area?

15. FINT (Fine Non-Tempered Ware)

Fabric No: 8 **Illustration:** Plate 17 **Number of Sherds:** 561

Kennet Class: None.

Basis of Grouping: Fabric.

Defining Characteristics: Fine non-tempered, tightly fired, predominantly oxidised fabric covering a distinctive though wide range of vessel forms, often similar to those found in FIG.

Coherence: Coherent, though the lack of coarse inclusions may obscure the distinctions between independent productions.

Decoration: Most vessel types are plain, though a few have incised double bands or elaborate rims. One jar has regular dots punctured in a register below the rim. Some also have incised comb decoration, especially FIN: 03-04, though this is generally more basic than that seen on incised wares like WINK. Occasionally FIN: 03 medium sized jars have more complex incising which includes combing and whipped cord marks.

Further Information: There is an obvious similarity between the compact evenly fired fabric of FINT and FIG and a number of the forms are the same. Clearly there is a fluid progression from one class to the other and the distinction can only be determined through relative proportions of grit. At the same time the extremes in both classes are clearly different and there are forms found in each class that are not represented in the other.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FIN: 01	Rounded jars, 'Pithoi' form	Everted & folded, 'barb' shaped	Wide at shoulders, rounded	Not clear	c.16 - 46cm	c.20 - 43cm	10 - 33cm	0.4 - 1cm
FIN: 02	Necked jars, 'mushroom' rim	Domed 'T' form	Shouldered and rounded	Not clear	c.30 - 75cm	c.25 - 35cm	9 - 15cm	0.5 - 0.8cm
FIN: 03	Necked simple rimmed jars	Simple 'S' profile and rounded & notched forms	Gentle rounded	Not clear	c.14 - 22cm	c.13 - 20cm	8 - 14cm	0.4 - 0.7cm
FIN: 04	Complex banded necked jars	Complex and banded	Rounded, some with spouts	Not clear	c.25 - 27cm	c.14 - 33cm	10 - 25cm	0.5 - 1cm
FIN: 05	Open bowls	Simple, everted, 'T' form & others	Shallow to medium depth	Not clear	?	?	?	?
FIN: 06	Incense burners	Simple	Waisted, handled & lightly rilled	Extended foot ring or heavy platform	12cm	12cm	12cm	0.8cm
FIN: 07	Lamps	Simple, rounded or squared	Semi-closed	Flat	5cm	9.8cm	9.8cm	0.5cm

Parallels and Dating: Not known.

Origin: Southern Iran?

16. FINT.B (Fine Non-Tempered Ware, Group B)

Fabric No: 8 (finer version) **Illustration:** Plate 18 **Number of Sherds:** 47

Kennet Class: None.

Basis of Grouping: Fabric, colour, texture and thickness of vessel walls.

Defining Characteristics: This class is very similar to FINT and it is difficult to tell whether it should be regarded separately. Fine, tightly fired, fully oxidised orange fabric with no visible inclusions, though there are some very fine black elements just visible at 10x magnification. Vessel walls are extremely thin and delicate.

Coherence: Reasonably coherent features.

Decoration: Plain.

Further Information: Not a particularly useful or clearly defined group. The fabric colour tends to be darker orange range than FINT and vessels tend to be more finely built, but there remains a degree of overlap.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FIN.B: 01	Simple rimmed jars	Simple vertical or slightly everted	Rounded	Flat	c.11cm	10 - 13cm	7 - 9cm	0.3 - 0.5cm
FIN.B: 02	Open bowls	Simple pointed	Shallow or steep sided	Flat	c.7 - 11cm	12 - 15cm	12 - 15cm	0.2 - 0.4cm

Parallels and Dating: Not known.

Origin: Southern Iran?

17. FINT.LV (Fine Non-Tempered Ware, Large Vessels)

Fabric No: 8 **Illustration:** Plate 7 **Number of Sherds:** 71

Kennet Class: Some of the FINT.LV pieces (LVF: 02) would be included within Kennet's generic LISV class.

Basis of Grouping: Fabric, vessel forms and vessel size.

Defining Characteristics: Medium to large sized vessels with thick walls. The fabric is relatively fine, distinguishing it from other large vessel classes.

Coherence: Unlike FINT, FINT.LV displays a much greater degree of variability, particularly in precise fabric composition.

Decoration: LISV style decoration is common including dots, straight and wavy bands. Two pieces also have false relief decoration.

Further Information: With additional material, it may be possible to produce more accurate sub-divisions within this class. It seems likely that there is a separate cream coloured group with a lighter specific gravity and fabric that bears some resemblance to the ALK body. Parallels can also be drawn between some pieces and GRIT.LV.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LVF: 01	Medium sized heavy bowls	Simple, everted & rounded, squared or folded	Straight & mid-depth	Flat	c.10 - 32cm	30 - 63cm	28 - 60cm	0.9 - 1.7cm
LVF: 02	Heavy thick walled jars, LISV style	Fattened, everted, sometimes rounded	Often shouldered & tall	Flat	c.23 - 80cm	c.27 - 60cm	15 - 56cm	0.8 - 2.3cm
LVF: 03	Handled jugs	Simple, slightly fattened	Shouldered	Flat	c.20 - 50cm	c.23 - 40cm	9 - 15cm	0.8 - 1.4cm
LVF: 04	Closed jars, 'pithoi' form	Everted & flattened, 'barb' shaped	Globular	Flat	c.23 - 25cm	c.32 - 37cm	15 - 17cm	0.8 - 1.3cm

Parallels and Dating: Not known.

Origin: Southern Iran?

18. GROG (Grog Tempered Ware)

Fabric No: 10 **Illustration:** Plate 21 **Number of Sherds:** 58

Kennet Class: None.

Basis of Grouping: Fabric.

Defining Characteristics: Regular grog temper showing through on the surface. Most vessels have a thick creamy white slip applied over an oxidised pink body. Some pieces also have a cream coloured body or a black or red slip applied over a red body. Vessels represented in the class include bowls, jars and jugs of various sizes and forms.

Coherence: Aspects of fabric and form are recurrent and consistent.

Decoration: Forms GRO: 01-02 are both plain while GRO: 03 has LISV style decoration including deeply incised straight and wavy bands (often framing one another) and oblique jabs arranged in chevrons. One bowl has a wavy line and a straight band along the top of the rim.

Further Information: Form GRO: 03 is almost identical to GROG.LV except that the vessels are slightly smaller.

Form(s)	Description	Rim	Body	Base	H	W	D	T
GRO: 01	Simple open bowls	Simple everted, projecting rounded or fattened	Medium depth & angle	Flat	c.13 - 20cm	31 - 52cm	31 - 52cm	0.6 - 1.4cm
GRO: 01	Flat handled jars & jugs	Everted & fattened	Rounded & heavily ribbed	Flat	c.22cm	c.26cm	20cm	1cm
GRO: 01	Incised decorated jars	Everted & fattened, often complex	Rounded & unshouldered	Flat	c.25 - 35cm	c.26 - 52cm	16 - 42cm	0.9 - 1.2cm

Parallels and Dating: Not known.

Origin: Southern Iran?

19. GROG.LV (Grog Tempered Ware, Large Vessels)

Fabric No: 10 **Illustration:** Plate 6 **Number of Sherds:** 44

Kennet Class: Most of the GROG.LV pieces (LVGRO: 01) would be included within Kennet's generic LISV class.

Basis of Grouping: Fabric, vessel forms and vessel size.

Defining Characteristics: GROG.LV has the same characteristics as those described for GROG except that the vessels are heavy thick-walled jars and bowls decorated in LISV style with thick incisions below the rim.

Coherence: Coherent.

Decoration: Almost all decorated with deep incised patterns below the rim including vertical slashes, heavy dots, wavy and straight bands or combed wavy bands.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LVGRO: 01	LISV style heavy jars & bowls	Heavy, thickened & everted, often flattened on top	Deep & upright	Flat	c.50 - 60cm	c.57 - 82cm	17 - 62cm	1 - 2cm

Parallels and Dating: Not known.

Origin: Southern Iran?

20. ORG.H (Hard Organic Tempered Ware)

Fabric No: 11 **Illustration:** Plates 22 & 23 **Number of Sherds:** 197

Kennet Class: Some of the ORG.H pieces (HOG: 03) would be included within Kennet's generic LISV class.

Basis of Grouping: Fabric.

Defining Characteristics: Fine, hard, mostly well-oxidised body with regular fibrous organic inclusions. There are also frequent over-fired examples, possibly wasters, with dark cores and a green or brown surface. Large vessels tend to have an increasingly gritty fabric.

Coherence: The integrity of the class is strengthened by the repeated occurrence of particular forms.

Decoration: Most vessels, especially smaller ones are plain. Some large vessels have straight or wavy combed bands, as do most of the vessels in form HOG: 01. One sherd has some form of inscription on the surface, (Sherd +9939).

Further Information: The forms are often similar to those found in the FINT and gritted fabric classes.

Form(s)	Description	Rim	Body	Base	H	W	D	T
HOG: 01	Small simple 'S' profile jars	Everted rims, flared necks	Shouldered though sloping & rounded	Flat	c.21 - 22cm	c.21 - 23cm	10 - 11cm	0.4 - 0.8cm
HOG: 02	Medium sized small open bowls	Everted, fattened & fairly simple	Steep sided	Flat	c.8 - 12cm	15 - 40cm	15 - 40cm	0.45 - 1.5cm
HOG: 03	Heavy thick rimmed LISV style jars	Everted, fattened & fairly simple	Closed, upright with sloping shoulders	Flat	c.40 - 50cm	c.46 - 70cm	30 - 54cm	1 - 2.2cm
HOG: 04	Large heavy open bowls	Everted, fattened & fairly simple	Fairly straight sided & deep	Flat	c.18 - 30cm	38 - 56cm	38 - 56cm	1.1 - 1.6cm
HOG: 05	Flat 'fish dishes'	Straight or up turned	Open & flat	Flat	2 - 3cm	16 - 28cm	16 - 28cm	1.7 - 2cm

Parallels and Dating: Not known.

Origin: Southern Iran?

21. ORG.I (Organic Tempered Ware, Intermediate Hardness)

Fabric No: 12 **Illustration:** Plates 24 & 25 **Number of Sherds:** 74

Kennet Class: Some of the ORG.I pieces (IOG: 03) would be included within Kennet's generic LISV class.

Basis of Grouping: Fabric.

Defining Characteristics: Slightly soft orange fabric with burnt out organic inclusions and a low level of sintering, although the body is still reasonably dense and compact. Softer than ORG.H, but harder than ORG.S.

Coherence: A rather disparate class, see comments related to Fabric 12.

Decoration: Some of the vessels, mostly the larger ones have crude incised decoration including single line and combed motifs.

Form(s)	Description	Rim	Body	Base	H	W	D	T
IOG: 01	Small to medium sized jars	Simple, everted & fattened	Rounded, sometimes handled	Flat	c.20 - 25cm	c.29 - 32cm	20 - 22cm	0.7 - 1.2cm
IOG: 02	Small bowls	Simple, everted & fattened	Open or closed & medium depth	Flat	c.12 - 14cm	22 - 29cm	16 - 29cm	0.8 - 1.1cm
IOG: 03	Heavy jars, LISV style	Heavy fattened & everted	Sloping shoulders & upright sides	Flat	c.30 - 46cm	c.25 - 54cm	19 - 46cm	1 - 2.2cm
IOG: 04	Thick walled heavy open bowls	Fattened, rounded & 'T' forms	Reasonably shallow	Flat	c.18 - 22cm	40 - 44cm	40 - 44cm	1.5 - 2.2cm
IOG: 05	Flat 'fish dishes'	Up turned & rounded	Open & flat	Flat	2cm	30cm	30cm	1.3cm

Parallels and Dating: Not known.

Origin: Southern Iran?

22. ORG.S (Soft Organic Tempered Ware)

Fabric No: 13 **Illustration:** Plates 26 & 27 **Number of Sherds:** 50

Kennet Class: Some of the ORG.S pieces (SOG: 03) would be included within Kennet's generic LISV class.

Basis of Grouping: Fabric.

Defining Characteristics: Vessels are often relatively thick walled with simple forms. The class is not dissimilar to the other organic tempered categories except that the fabric has a soft chalky feel and the vessels often have broad combed decoration covering much of the upper portion.

Coherence: Reasonably well defined.

Decoration: About half of the pieces in the class are plain. The other half have incised bands, wavy bands and/or combed bands on the upper portion of the vessel. A few have more complex panels of decoration.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SOG: 01	Medium sized bowls, mostly open	Everted & fattened	Fairly upright	Flat	c.15 - 20cm	23 - 30cm	23 - 30cm	1 - 1.6cm
SOG: 02	Medium to small sized jars	Everted & fattened	Long neck with sloping shoulders	Flat	c.15 - 35cm	c.18 - 31cm	12 - 15cm	0.7 - 1.6cm
SOG: 03	Heavy thick walled jars	Simple or everted & fattened	Upright with sloping shoulders	Flat	c.32cm	c.48 - 66cm	28 - 58cm	1.7 - 3cm

Parallels and Dating: Not known.

Origin: Southern Iran?

23. ORG.HS (Handmade Soft Organic Tempered Ware)

Fabric No: 13 **Illustration:** Plate 28 **Number of Sherds:** 37

Kennet Class: None.

Basis of Grouping: Fabric and production technique.

Defining Characteristics: Extremely soft porous handmade pottery with large and abundant fibrous voids left by an organic temper. The fabric is similar to the wheel-made variety except that it is slightly coarser and softer; also, a few pieces have slightly darkened cores.

Coherence: Very coherent and easily recognisable. Many sherds may be from the same vessel or an identical production.

Decoration: None.

Further Information: The pottery appears to have been fired in a primitive fashion at a relatively low temperature, probably not more that 700°C.

Form(s)	Description	Rim	Body	Base	H	W	D	T
HS: 01	Thick walled simple open bowls	Simple & rounded	Straight upright sides	Flat with thick wall/base intersect-ion	c.10 - 25cm	25 - 40cm	25 - 40cm	1.1 - 2.9cm

Parallels and Dating: Apart from the fabric colour, which in this case is mostly buff-yellow, the class bears a good resemblance to Chaff-Tempered Ware, one of the most abundant coarse wares at Tepe Yahya between periods VII - VB (Beale, 1986: 39). In particular the sherds in the Williamson Collection relate most closely to the plain, softer-fired, later-dated Chaff-Tempered Ware of Period VIB.2 - VA.2 dated to the 4th millennium BC (Beale, 1986: 39, 42, 47, figs. 4.4-7). This parallel cannot be exact however, as petrographic analysis has indicated that Chaff Tempered Ware was locally produced within the Yahya area, while most of the ORG.HS sherds come from site H200 on the Bushehr peninsula, a site that Williamson attributed to the Ubaid period (Whitehouse & Williamson, 1973: 35, Note 32). Interestingly, there are also a few sherds in ORG.HS from site R102 close to Tepe Yahya, suggesting that closer examination of the material may provide further internal sub-divisions.

Origin: Southern Iran?

24. LAG (Large-Gritted Dark Cored Vessels)

Fabric No: 15 **Illustration:** Plate 29 **Number of Sherds:** 16

Kennet Class: None.

Basis of Grouping: Fabric and form.

Defining Characteristics: Dense orange fabric with dark grey cores and large and frequent worn quartz and grey stone inclusions. Vessels are almost all of a similar form: a fairly wide necked jar with an everted and folded flaring rim. One sherd belonging to the same class is from an open bowl.

Coherence: Both fabric and form are consistent and distinctive.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LA: 01	Wide necked jars	Everted, folded & flaring	Sloping shoulders	Flat?	c.23 - 26cm	c.32 - 38cm	30 - 36cm	0.7 - 1cm
LA: 02	Simple open bowls	Slightly fattened internally	Steep sided	Flat?	c.10cm	18cm	18cm	0.9cm

Parallels and Dating: Iron Age (spot dated, Magee 15/07/2002).

Origin: All bar two of the LAG sherds in the Williamson Collection come from the Bushehr peninsula. The two outlying sherds are from Region D, just beyond Siraf and from further afield in the Minab area. The concentration of this distinctive class in Bushehr or Fars provinces appears to be reconfirmed by field surveys undertaken in 2004-05 with no occurrences being noted in the Minab or Rudan areas (Kennet *et al,* Forthcoming), while in the Bushehr hinterland regions LAG was recovered from 10 different sites (Carter *et al,* Forthcoming). Examples of the class have also recently been observed in the fortification ditch at Rishahr and from the spoil heap at Bishapur (personal observation Nov 2005).

25. GIB (Gritty Brown Ware)

Fabric No: 27 **Illustration:** Plate 30 **Number of Sherds:** 8

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Dense often dark cored, rather soft brown or orange fabric with small white inclusions. Vessels are closed and are decorated with lightly incised ribs or large areas of impressed weave-effect pattern.

Coherence: Coherent.

Decoration: As described above.

Form(s)	Description	Rim	Body	Base	H	W	D	T
GIB: 01	Closed everted rimmed jars	Sharply everted & square lipped	Rounded	Not known	c.18cm	c.26cm	22cm	0.6 - 1.2cm

Parallels and Dating: Not known.

Origin: Southern Iran?

26. SWIS (Soft White Speckled Ware)

Fabric No: 36 **Illustration:** Plate 31 **Number of Sherds:** 11

Kennet Class: None.

Basis of Grouping: Fabric and production technique.

Defining Characteristics: Soft and brittle, handmade or slow-turned fully reduced grey jars with frequent small white lime inclusions that give the fabric a speckled appearance.

Coherence: Some variation in the frequency of lime inclusions and a wide range of forms are represented, including unique forms.

Decoration: Most often plain though examples of SW: 02 have thin incised horizontal banding and one body sherd has frames of oblique lines on the neck and body.

Further Information: There is some doubt the overall validity of this class. All sherds from SW: 01 are from the Western coastal area in the survey, while SW: 02 sherds are from the northeast inland zone suggesting that the similarity of fabric may be coincidental and unrelated.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SW: 01	'S' profile everted rimmed jars	'S' profile, vertical or everted lip,	Shouldered & rounded	Not clear	c.12 - 20cm	c.15 - 24cm	11 - 22cm	0.4 - 0.7cm
SW: 02	Squat handled jars	Closed neck, folded thick 'barb' rim	Short strap handle attacked at rim, widening towards base	Not clear	c.15cm	c.32cm	20cm	0.5 - 0.7cm

SW: 03	Small jars with projecting collar	Simple, very slightly everted	Projecting ring-collar below rim	Not clear	c.10cm	c.21cm	16cm	0.6cm

Parallels and Dating: Not known.

Origin: Southern Iran?

27. CHAM.1-3 (Crude Handmade Ware, Groups 1 - 3)

Fabric No: 31, 32, 33

Kennet Class: The class may be equivalent to PROTO although there are certain differences that suggest that CHAM is part of a parallel industry in Iran.

Basis of Grouping: Fabric and production technique.

Defining Characteristics: Very crude thick-walled handmade vessels.

CHAM.1 – (80 Sherds) The fabric (Fabric 31) is light cream and orange coloured and fairly soft and crumbly though it cannot be scratched with the fingernail. Group 1 is distinguished from the others by the presence of a coarse grit temper (see Plate 32).

CHAM.2 – (69 Sherds) Made from a light cream to orange coloured, low-fired fabric (Fabric 32) with a rough chalky texture, which is similar to CHAM.1 except that the levels of grit temper are relatively low or completely absent (see Plates 33 & 34).

CHAM.3 – (116 Sherds) Fine, non-tempered fabric (Fabric 33) that appears very similar to FINT body but in this case the vessels are crude and handmade. CHAM.3 vessels are similar to CHAM.2, the main difference is that they are harder fired, smaller, thinner walled, darker coloured and have forms that are more angular. Some pieces also have painted decoration (see Plate 35).

Coherence: The distinction between CHAM.2 and CHAM.3 is the most difficult to maintain. CHAM.2 tends to have a softer fabric, thicker walls and looser forms. CHAM.1 and CHAM.2 are more obviously different although they share almost identical forms. There may be a case for considering the painted ware sherds in CHAM.3 as a separate class as they display different forms. The fabric and firing however is very similar and the sherds cannot be associated with any of the other painted classes.

Decoration: CHAM.1 vessels are mostly plain except for one jug, a number of lids and the fish dishes (CHA.1: 05), which are decorated with simple rows of dots. CHAM.2 vessels are mostly plain except for one bowl sherd that has deep quickly-executed incisions below the rim, a motif also found on Proto-Julfar Ware (Kennet, pers. comm. 2002) and form CHM.2: 04 which is either plain or has incised dots close to the rim. CHAM.3 are mostly plain except for the painted sherds and form CHM.3: 04, which is painted with medium-thickness meandering iron-red lines.

Further Information: All of the CHAM, especially Groups 1 and 2, have features in common with Proto-Julfar Ware in terms of form and in some cases decoration. Proto Julfar Ware has been found in small quantities throughout the earlier phases of the Kush sequence up to Phase E-07/E-08 when true Julfar first appeared (Kennet, 2004: 53). Unlike Proto-Julfar, however, CHAM has an entirely different fabric, lacking the ubiquitous red platelets. This points to the

possibility that CHAM may represent a parallel and contemporary industry on the Iranian side of the Persian Gulf that unlike its counterpart on the Arabian side, failed to develop into a major export industry.

Form(s)	Description	Rim	Body	Base	H	W	D	T
CHM.1: 01	Simple 'S' profiled pot-bellied jars	Simple 'S' profile, everted & flaring	Bulbous with a saggy profile	Flat	c.15 - 20cm	c.24 - 36cm	16 - 26cm	0.7 - 1.1cm
CHM.1: 02	Simple thick walled bowls	Simple	Curved, mostly open mid-depth	Flat	c.10 - 17cm	c.19 - 40cm	15 - 40cm	0.5 - 1.3cm
CHM.1: 03	Necked and handled vessels	Simple slightly everted	Shouldered & handled	Flat	c.15 - 30cm	c.20 - 26cm	10 - 11cm	0.5 - 1.1cm
CHM.1: 04	Lids	N/A	Flat with a protruding handle in the centre	Flat	6cm	20cm	20cm	1.2cm
CHM.1: 05	Flat 'fish dishes'	Up turned with a rounded lip	Open & flat	Flat	2.5 - 3.5cm	14 - 26cm	14 - 26cm	0.7 - 1.4cm
CHM.2: 01	Simple 'S' profiled pot-belied jars	Simple 'S' profile, everted & flaring	Bulbous with a saggy profile	Flat or slightly concave	c.15 - 20cm	c.22 - 29cm	14 - 20cm	0.6 - 1.3cm
CHM.2: 02	Simple thick walled flat based bowls	Simple rounded	Upright & slightly curved	Flat or rounded	3 - 15cm	5 - 40cm	5 - 40cm	0.7 - 1.1cm
CHM.2: 03	Handled spouts & one-offs	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CHM.2: 04	Flat 'fish dishes'	Slightly up turned or rounded	Open & flat	Flat	1.3 - 2cm	16 - 22cm	16 - 22cm	1 - 1.3cm
CHM.3: 01	Simple 'S' profiled pot-belied jars	Simple 'S' profile, everted & flaring	Bulbous with a saggy profile	Flat or slightly concave	5.5 - 24cm	13 - 40cm	9 - 27cm	0.4 - 1.5cm
CHM.3: 01	Small simple open bowls	Simple of everted, rolled & flattened	Open with dished upright sides	Flat or with a low rounded foot ring	c.5 - 12cm	10 - 31cm	10 - 31cm	0.5 - 1.3cm
CHM.3: 01	Handled vessels & miscellaneous objects	Simple, slightly everted	Long neck & sloping shoulders, strap handles	Flat? or tall foot ring	c.10 - 20cm	c.13 - 27cm	7 - 20cm	0.6 - 1cm
CHM.3: 01	Flat 'fish dishes'	Slightly up turned with rounded lip	Open & flat	Flat	1.6 - 2.5cm	18 - 20cm	18 - 20cm	0.8 - 1.2cm

Parallels and Dating: Similar but not identical to Proto-Julfar Ware recovered in low quantities from Kush through Periods III and IV dated to between the 8th - 11th centuries (Kennet, 2004: 53).

Origin: Southern Iran?

28. REL.LV (Large Relief Decorated Vessels)

Fabric No: 9, 7 **Illustration:** Plate 37 **Number of Sherds:** 15

Kennet Class: None.

Basis of Grouping: Surface treatment.

Defining Characteristics: Broad raised bands and scrolls of relief decoration on thick walled heavy vessels. The fabric is invariably gritted, either with a fine well-sorted grit (Fabric 7) or with larger less well-sorted grits (Fabric 9).

Coherence: Fabric composition and harness are rather varied, as are the motifs, however the technique of thick relief decoration on coarse gritted fabric is unique.

Decoration: Raised relief decoration created with applied strips of clay configured in scrolls and various geometric patterns. Mostly strips are left plain though some are pinched or stamped.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LVR: 01	Thick walled jars & bowls	Simple where present	In bowls quite steep sided, otherwise unshouldered & rounded	Flat?	c.25 - 45cm	c.30 - 60cm	15 - 30cm	1 - 2.5cm

Parallels and Dating: The class can be compared with material from Dara-i Bast in Baluchistan, which itself has strong cultural links to Sind in Pakistan. The group is certainly prehistoric and compares well to examples recovered from the Iron Age Period III levels at Tepe Yahya (spot dated, Magee 15/07/2002).

Origin: Southern Iran?

29. CORD (Broad Cordoned Storage Vessels)

Fabric No: 7 & 9 **Illustration:** Plate 38 **Number of Sherds:** 32

Kennet Class: None.

Basis of Grouping: Surface treatment and fabric.

Defining Characteristics: Fine well-sorted sand or grit-tempered fabrics fired slightly softer than FIG or GRIT, with which their fabric compares. This gives the body a slightly soft chalky texture though the body remains relatively hard. The vessels are generally closed and all have a raised band or cordon incised with a simple lattice motif.

Coherence: Some variability in the composition, abundance and sorting of the coarse inclusions, however the design of a raised cordon with cruciform incisions is widespread.

Decoration: As described above, raised and flattened bands incised with a lattice motif, some vessels also have the same design incised directly onto the body on the neck, shoulder or around the waist.

Further Information: This appears to be one of the most common storage jar classes in southeast Iran during the Iron Age from between 1100 – 600 BC (Magee, pers. com. 15/07/2002).

Form(s)	Description	Rim	Body	Base	H	W	D	T
COR: 01	Closed Jars	Necked, squared rim & a notch along the top	Sloping shoulders, rounded	Flat	c.30 - 40cm	c.30 - 50cm	15 - 30cm	1.3 - 2.2cm

Parallels and Dating: Iron Age, 1100 - 600 BC (spot dated, Magee 15/07/2002).

Origin: Southeast Iran?

30. WSUQ (Wadi Suq, Dark-Cored Grit Tempered Buff Ware)

Fabric No: 18 **Illustration:** Plate 39 **Number of Sherds:** 2

Kennet Class: None.

Basis of Grouping: Fabric.

Defining Characteristics: Thick-walled closed vessels with a blue-grey cores, bright orange outer margin and creamy-buff coloured surface. The fabric is hard, has a smooth chalky texture and regular fine grits that are visible in the section along with a number of voids caused by burnt-out organic inclusions.

Coherence: The sample is small but the material is distinctive and coherent.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
WS: 01	Closed thick walled vessels	Not clear	Globular	Not clear	c.25 - 30cm	c.28 - 38cm	Not Clear	1.5 - 1.6cm

Parallels and Dating: Wadi Suq is a typical Late Bronze Age (2nd millennium) ware found in the Oman peninsula (spot dated, Magee 15/07/2002). Few examples are presently known from Iran (Kennet, pers. comm. 2002).

Origin: Oman, UAE?

31. REBLAB (Red on Black Handmade Burnished Ware)

Fabric No: 28 **Illustration:** Plate 40 **Number of Sherds:** 9

Kennet Class: None.

Basis of Grouping: Surface treatment and production technique.

Defining Characteristics: Rough handmade pottery with a low-fired, yet relatively hard black-cored fabric. Surfaces are patchy black and bright red and are heavily burnished. Burnishing is irregular.

Coherence: Coherent although currently a very small class.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
RBB: 01	Simple closed bowls	Simple & slightly fattened	Steep curved walls	Rounded ?	c.17cm	c.30cm	20cm	0.8cm

Parallels and Dating: Prehistoric.

Origin: Southern Iran?

32. SHABUR.A (Shaved and Burnished Ware, Group A)

Fabric No: 37 **Illustration:** Plate 41 **Number of Sherds:** 77

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: A very finely levigated consistent cream-coloured body with surfaces that have been shaved and later burnished. Vessels are hand built and slow turned. The surfaces are rarely decorated.

Coherence: Coherent.

Decoration: Where decoration is present it appears to be simple, with a clear relation of style to PAW.LV.

Further Information: Bears some resemblance to PAW.FC and PAW.LV except that the fabric is less soft and chalky and denser with a waxy feel. Vessel forms are also very similar if not the same. One of the major differences is that SHABUR.A rarely displays decoration and that it consistently comes from different sites to the other classes.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SHA.A: 01	Small open bowls	Simple & thinned	Gently curving sides	Flat or turned concave foot well	c.8 - 25cm	14 - 56cm	14 - 56cm	0.5 - 0.9cm
SHA.A: 02	Small complex everted rimmed jars	Everted, often rather complex with low collars	Steep sloping shoulders	Flat, chamfer-ed lower wall	c.15 - 25cm	c.22 - 44cm	14 - 26cm	0.6 - 1.1cm

Parallels and Dating: Prehistoric.

Origin: Southern Iran?

33. SHABUR.B (Shaved and Burnished Ware, Group B)

Fabric No: 38 **Illustration:** Plate 42 **Number of Sherds:** 67

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Same as SHABUR.A except that the fabric is orange the decoration tends to be more complex and some of the forms are similar. Burnishing can occur on both the interior and exterior.

Coherence: Coherent.

Decoration: Decoration is more complex than on SHABUR.A but still simple. Motifs are similar to PAW.LV. Bowls are decorated on the interior and jars on the exterior.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SHA.B: 01	Small open bowls	Simple often shaved & irregular	Gently curving sides	Flat of concave foot well	c.7 - 12cm	16 - 30cm	16 - 30cm	0.4 - 0.8cm
SHA.B: 02	Small everted rimmed jars	Everted & rather complex	Steep sloping shoulders	Flat	c.11 - 18cm	c.17 - 27cm	12 - 20cm	0.5 - 1cm

Parallels and Dating: Prehistoric.

Origin: Southern Iran?

34. FIGUR (Figurines)

Fabric No: Various **Illustration:** Plate 43 **Number of Sherds:** 24

Kennet Class: None.

Basis of Grouping: Object category.

Defining Characteristics: Assorted figurines, mostly zoomorphic and some anthropomorphic, generally in a heavily fragmented condition. Most of the zoomorphs appear to be camelids though there is a possible equid and a possible cervid that may have been attached into a vessel. The fabrics are varied; most are coarse densely-fired reddish-orange with rough gritty inclusions and organic elements. Cores tend to be reduced to grey. Fractures tend to be hackly and the feel rough and harsh. Density and weight are high. Both anthropomorphs are on a much finer body.

Coherence: Coherent

Decoration: Incised detail such as eyes, mouth and nostrils. One has a rope bridle and headband with incised cordon effect. Otherwise mostly plain.

Further Information: The majority of the figurines have been broken in the way that one would expect for general 'accidental breakage', i.e. they have the extremities knocked off. Four pieces stand out however as having breaks that would have required very considerable well directed force, which is not compatible with a natural breakage pattern (Chapman, Priestman & Dragos, Forthcoming). This suggests that they may have been deliberately broken, a practice that appears to surround figurine use in many parts of the world (Chapman, 2000).

Parallels and Dating: The dating of figurines, most of which are camels, is not well defined, although they may belong to the Iron Age or Hellenistic period. "Many fragmentary terracotta camel figurines, often with incised or punctate designs..." have been picked up from the surface of Thaj in Saudi Arabia (Potts, ii.1990: 48). The site is the largest and most influential in the immediate area. Significant urban development began at the site during the Hellenistic period and came to and during the 1st century AD, though is by no means certain that the surface finds belong to the main phase of the site's occupation.

Origin: Southern Iran?

35. HM.N-ID (Non-Identified Handmade Wares)

Fabric No: Various **Illustration:** None **Number of Sherds:** 148

Kennet Class: None.

Basis of Grouping: Production technique.

Defining Characteristics: Assorted handmade wares that cannot be assigned to any particular class. There are a wide range of forms, fabrics and types of firing treatment, though there is a tendency towards very coarse, grit tempered, friable, low-fired bodies and slightly irregular forms. A few pieces have been slow turned.

Coherence: An assorted selection of different classes but all produced using the same manufacturing technique.

Decoration: Mostly plain though some have incised decoration or slip.

Parallels and Dating: Not known.

Origin: Southern Iran?

36. CGW.N-ID (Non-Identified Coarse Grey Ware)

Fabric No: Various **Illustration:** None **Number of Sherds:** 87

Kennet Class: UNIQU.

Basis of Grouping: Fabric colour.

Defining Characteristics: Assorted unglazed wheel-thrown coarse wares with reduced grey fabric, which could not be identified and which cannot be assigned to any one of the recognised classes.

Coherence: An assorted selection of different classes but all with the same fabric colour.

Decoration: Various and plain.

Parallels and Dating: Not known.

Origin: Not known.

37. CRW.N-ID (Non-Identified Coarse Red Wares)

Fabric No: Various **Illustration:** None **Number of Sherds:** 176

Kennet Class: UNIQU.

Basis of Grouping: Fabric colour.

Defining Characteristics: Assorted unglazed wheel-thrown coarse wares with oxidised orange to red fabric, which could not be identified and which cannot be assigned to any of the recognised classes.

Coherence: An assorted selection of different classes but all with the same fabric colour.

Decoration: Incised or plain.

Further Information: Of all the non-identified Coarse Ware classes, this is the largest and it may still contain material that can be identified, i.e. a group that may be Parthian and another that resembles GROG and SLIP.TB.

Parallels and Dating: Not known.

Origin: Not known.

38. CCW.N-ID (Non-Identified Coarse Cream Ware)

Fabric No: Various **Illustration:** None **Number of Sherds:** 129

Kennet Class: UNIQU.

Basis of Grouping: Fabric colour.

Defining Characteristics: Assorted unglazed wheel-thrown coarse wares with reduced grey fabric, which could not be identified and which cannot be assigned to any of the recognised classes.

Coherence: An assorted selection of different classes but all with the same fabric colour.

Decoration: Various and plain.

Parallels and Dating: Not known.

Origin: Not known.

39. WINC (White Incised Ware)

Fabric No: Various and 71 **Illustration:** Plate 80 **Number of Sherds:** 85

Kennet Class: Kennet's WHITE would be included within this class, though WHITE is a specific class category and WINC is generic.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Smooth, fine grained, light cream, orange or grey coloured fabric, which is slightly porous but hard. The exterior surfaces are often elaborately decorated with incisions, impressions, stamps, occasional mouldings and appliqué elements. Most of the sherds in this class probably come from water-cooling jars.

Coherence: The selection of WINC here is mixed and includes a number of different classes that could readily be differentiated with a larger assemblage.

Decoration: Wide array of techniques as described above.

Parallels and Dating: Examples of what is probably a related class were recovered from the Hulaylah survey where it was referred to as Ware 12 (Kennet, 1994: 28). Porous white wares appear to be an important part of the Islamic coarse ware assemblage through much of the Kush

and al-Mataf sequences, although they tend to be most prevalent between the 9th - 15th/16th centuries (Kennet, 2004: 57). One of the features of WINC appears to be its extensive variation; a feature that is reflected in the Williamson assemblage. Further work on the classification of this material could provide a useful insight into the chronology and regional distribution of Islamic coarse ware.

Origin: Southern Iran or Southern Mesopotamia.

40. INCIMP (Incised and Impressed Ware)

Fabric No: 72 **Illustration:** Plate 81 **Number of Sherds:** 20

Kennet Class: None.

Basis of Grouping: Fabric, vessel forms and surface treatment.

Defining Characteristics: Mostly mid-depth, thick-walled bowls with a simple profile, flat base and thickening of the wall at the side/base junction. The interior surfaces are covered with clean deeply impressed dots and incised lines. The fabric is fine grained, light coloured and fairly hard and heavy.

Coherence: Small but highly distinctive and stylistically unified class.

Decoration: Deep impressed dots are often placed in lines or scattered within panels delineated by incised lines. Lines can be used to frame panels or as free flowing elements.

Form(s)	Description	Rim	Body	Base	H	W	D	T
INI: 01	Simple open bowls	Simple, rounded or everted	Open, mid-depth	Flat curving into wall	c.9 - 10cm	22 - 27cm	22 - 27cm	0.7 - 1cm

Parallels and Dating: Recent survey in the Minab area produced a single INCIMP sherd from a site (PK4) dominated by pottery of the 17th - 20th centuries, but also containing some finds extending back to the 12th/13th centuries (Kennet *et al,* Forthcoming). The evidence is therefore by no means conclusive, although the suggestion is that INCIMP may be a relatively modern class.

Origin: Most of the INCIMP in the Williamson Collection comes from the Minab area and all from the eastern regions of the survey, suggesting that this distinctive class has a distribution that is restricted to Hormuzgan and Kerman provinces.

41. MEW.LG (Light Grey Moulded Ewers)

Fabric No: 49 **Illustration:** Plates 71 & 72 **Number of Sherds:** 384

Kennet Class: None.

Basis of Grouping: Production technique and fabric colour.

Defining Characteristics: Highly ornate vessels manufactured in several sections in press moulds and crudely luted together. Ornate, mostly false relief decoration covers most areas of the vessel exterior. The fabric has a 'dry' appearance and is slightly porous and brittle. The colour is a consistent light buff-grey. Variation in wall thickness and base and neck size

suggests that several different sizes of the same vessel form were manufactured. The form is handled water jar with a raised foot, rounded body and flaring neck.

Coherence: Decorative style, fabric, fabric colour and type are all consistent.

Decoration: Complex-intertwining arabesques usually contained within radial panels. Also more simple registers of vertically placed petals used on the shoulder or towards the base of the foot pedestal. Blank areas are usually left to separate the various elements of decoration.

Form(s)	Description	Rim	Body	Base	H	W	D	T
MLG: 01	Handled water ewer	Flared neck, simple pointed rim	Rounded with strap handle from neck to shoulder	Flaring pedestal, squared bottom	c.23 - 36cm	c.20 - 34cm	13 - 15cm	0.4 - 0.8cm

Parallels and Dating: The class is well represented in Phases 1 and 2 at Tepe Dasht-i-Deh dated to the 12th - 13th centuries but is absent from Phase 3 dated to the 14th century (Williamson, 1971e: 183) and also from other 14th 'Minab Incised Ware' sites in the Musandam peninsula (de Cardi, 1975: 17, 64).

Origin: Direct evidence for the production of Moulded Ewers comes from the discovery of moulds and firing wasters at a number of sites in the Minab plain, the Jiruft plain and the Soghun Valley. Within the Williamson Collection, the bulk of the moulds and some miss-fired pieces come from the single site of P1, which has not yet been relocated, but which it lies somewhere within the Jiruft plain in the upper Halil-Rud or Rudbar area. There are also a significant number of misfired pieces from K154 and K130, two separate sites in the Minab plain. The latter lies a few kilometres northwest of the modern town of Minab, and the former has not yet been relocated. In the Stein Collection, most of the moulds come form one site, Shahr-i-Daquianus in the upper Halil-Rud, which is probably the same site as P1. There is also a second site Qalat Sarawan, a few kilometres south of the town of Minab, which is not well represented in the British Museum collection, but which Stein describes as producing a thick scatter of relief decorated pottery (Stein, 1937: 184). Further west in the Soghun Valley a mass of the ware was recovered from the site of Tepe Dasht-i-Deh, including signs that the ware was produced on site (Williamson, 1971: 184). Finally, a kiln was identified at site R67A between Buluk and Fars associated with a mass of moulded ware and monochrome and polychrome Sgraffiato wasters (Prickett, 1986a: 1168).

42. MEW.DG (Dark Grey Moulded Ewers)

Fabric No: 50 **Illustration:** Plate 74 **Number of Sherds:** 42

Kennet Class: None.

Basis of Grouping: Production technique and fabric colour.

Defining Characteristics: Same characteristics as MEW.LG except that the fabric is consistently darker. The decoration is also the same style mostly in false relief. Vessels tend to be within the smaller size range.

Coherence: Much smaller sample than MEW.LG but the fabric composition and colour appear consistent.

Decoration: See MEW.LG description.

Form(s)	Description	Rim	Body	Base	H	W	D	T
MDG: 01	Handled water ewer	Flared neck, simple pointed rim	Rounded with strap handle from neck to shoulder	Flaring pedestal, squared bottom	c.23cm	c.20cm	13cm	0.4cm

Parallels and Dating: Dated to the 12th - 13th centuries at Tepe Dasht-i Deh (see MEW.LG).

Origin: Southeast Iran (see MEW.LG).

43. MEW.O (Orange Moulded Ewers)

Fabric No: 51 **Illustration:** Plate 78 **Number of Sherds:** 19

Kennet Class: None.

Basis of Grouping: Production technique and fabric colour.

Defining Characteristics: Same characteristics as MEW.LG except that the fabric is consistently oxidised to bright orange and the vessels are all within the smaller size range.

Coherence: Small but coherent sample.

Decoration: See MEW.LG description.

Form(s)	Description	Rim	Body	Base	H	W	D	T
MO: 01	Handled water ewer	Flared neck, simple pointed rim	Rounded with strap handle from neck to shoulder	Flaring pedestal, squared bottom	c.23cm	c.20cm	13cm	0.4cm

Parallels and Dating: Dated to the 12th - 13th centuries at Tepe Dasht-i Deh (see MEW.LG).

Origin: Southeast Iran (see MEW.LG).

44. MEW.BR (Brown Moulded Ewers)

Fabric No: 52 **Illustration:** Plate 79 **Number of Sherds:** 60

Kennet Class: None.

Basis of Grouping: Production technique and fabric colour.

Defining Characteristics: Same characteristics as MEW.LG except that the fabric is consistently oxidised and fired to a fairly constant brown. Vessels cover the entire size range but larger forms predominate.

Coherence: Coherent sub-class.

Decoration: See MEW.LG description.

Form(s)	Description	Rim	Body	Base	H	W	D	T
MBR: 01	Handled water ewer	Flared neck, simple pointed rim	Rounded with strap handle from neck to shoulder	Flaring pedestal, squared bottom	c.23 - 36cm	c.20 - 34cm	13 - 15cm	0.4 - 0.8cm

Parallels and Dating: Dated to the 12th - 13th centuries at Tepe Dasht-i Deh (see MEW.LG).

Origin: Southeast Iran (see MEW.LG).

45. MEW.C (Cream Coloured Moulded Ewers)

Fabric No: 53 **Illustration:** Plate 77 **Number of Sherds:** 128

Kennet Class: None.

Basis of Grouping: Production technique and fabric colour.

Defining Characteristics: Same features MEW.LG except that the fabric is well oxidised and fired to a light creamy yellow colour and the decoration has a slightly different style. Vessels are exclusively in the smaller size range.

Coherence: Slightly more varied fabric colour than other MEW sub-classes but still reasonably consistent and the sample in the Collection is large.

Decoration: Same as that described for MEW.LG but this class also includes examples of true relief, usually as zones of raised stipples.

Form(s)	Description	Rim	Body	Base	H	W	D	T
MO: 01	Handled water ewer	Flared neck, simple pointed rim	Rounded with strap handle from neck to shoulder	Flaring pedestal, squared bottom	c.23cm	c.20cm	13cm	0.4cm

Parallels and Dating: What appears to be same class occurs in the 'Western Area' at Qasr-i Abu Nasr and in abundance at Istakhr where it has been dated to the 10th - 11th centuries (Whitcomb, 1985: 58, fig. 21, r,u-jj, pl. 17-20).

Origin: Southern Iran?

46. MEW.CC (Coarse Cream Moulded Ewers)

Fabric No: 54 **Illustration:** Plate 76 **Number of Sherds:** 48

Kennet Class: None.

Basis of Grouping: Production technique and fabric.

Defining Characteristics: Similar features to MEW.LG except that the fabric is a well oxidised, light creamy-yellow and is softer with an organic temper and/or coarse elements. The decorative style is also slightly different to MEW.LG. Vessels fall within the small to medium size range.

Coherence: Some variation in the type, sorting and frequency of inclusions.

Decoration: The style of decoration is similar to that described for MEW.LG and others but tends to be more sparse and simple. True rather than false relief predominates in this class. The main motifs are areas of raised stippling, rosettes, petal registers and other more complex designs.

Form(s)	Description	Rim	Body	Base	H	W	D	T
MCC: 01	Handled water ewer	Flared neck, simple pointed rim	Rounded with strap handle from neck to shoulder	Flaring pedestal, squared bottom	c.23 - 32cm	c.20 - 28cm	13 - 14cm	0.4 - 0.6cm

Parallels and Dating: Dated to the 12th - 13th centuries at Tepe Dasht-i Deh (see MEW.LG).

Origin: Southeast Iran (see MEW.LG).

47. MEW.MF (Misfired Moulded Ewers)

Fabric No: Not defined **Illustration:** Plate 75 **Number of Sherds:** 14

Kennet Class: None.

Basis of Grouping: Production technique and fabric condition.

Defining Characteristics: Same features to other moulded ewers except that the fabric is brown in the core and greenish-grey on the surface. Some pieces are warped and bloated. All are highly vitrified and have become clinky rather than soft and porous. All belong to the smaller vessel size range.

Coherence: Small sample but coherent features.

Decoration: Similar to MEW.LG or MEW.C.

Form(s)	Description	Rim	Body	Base	H	W	D	T
MMF: 01	Handled water ewer	Flared neck, simple pointed rim	Rounded with strap handle from neck to shoulder	Flaring pedestal, squared bottom	c.23cm	c.20cm	13cm	0.4cm

Parallels and Dating: Dated to the 12th - 13th centuries at Tepe Dasht-i Deh (see MEW.LG above).

Origin: Southeast Iran (see MEW.LG).

48. MEW.MO (Ewer Moulds)

Fabric No: 49, 51, 52, 53, 54 **Illustration:** Plate 73 **Number of Sherds:** 18

Kennet Class: None.

Basis of Grouping: Object category.

Defining Characteristics: Thick-walled open clay moulds with raised or impressed decoration, which has been stamped into the wet clay rather than carved. The outsides are left uneven and often have finger impressions. Each would have been used to press-mould sections of moulded ewer, which were then luted together with slurry. Various fabrics are represented on the moulds.

Interestingly there appears to be a direct correlation between some of the fabrics represented on the moulds and those that occur on the sub-classes of Ewer. These associations seem to be supported by matches in the motifs found on the moulds and those that occur on the surface of the corresponding sub-classes.

Coherence: Object type is the same but the fabric and decoration is varied. Most appear to be body moulds as opposed to foot or neck moulds. These sections may have been formed in another way.

Decoration: Various motifs as seen on vessels.

Further Information: Sites where ewer moulds are found should probably be considered as production sites, although there may have been other reasons for the moulds being moved around.

Parallels and Dating: Dated to the 12th - 13th centuries at Tepe Dasht-i Deh (see MEW.LG above).

Origin: Southeast Iran.

49. HONEY (Honeycomb Storage Jars)

Fabric No: 40 **Illustration:** Plate 70 **Number of Sherds:** 35

Kennet Class: HONEY.

Basis of Grouping: Fabric & surface treatment.

Defining Characteristics: Heavy, handmade storage jars with a distinctive honeycomb effect decoration produced by lines of closely-spaced fingertip impressions covering most of the exterior but stopping before the base and neck. The fabric is a hard yellow or yellowish-green with a consistent background of fine black sand.

Coherence: Coherent and readily recognisable.

Decoration: As described above.

Further Information: This was probably never a common class in the Lower Persian Gulf. Only one or two sherds occurred in the Kush sequence and only a score were collected during survey in Ras al-Khaimah (Kennet, pers. comm. 2002). In southern Mesopotamia it is probably more widespread, however, the level of attention that the class has received probably owes more to the ease of recognising the material rather than its archaeological significance.

Form(s)	Description	Rim	Body	Base	H	W	D	T
HON: 01	Large thick walled storage jars	Not clear, possibly similar to Torpedo jars	Broad & rounded	Not known	c.100 cm	c.150 cm	Not known	1.1 - 1.7cm

Parallels and Dating: The class has traditionally been regarded as a Sasanian type fossil, but has not yet been found in any secure Sasanian contexts. The only dated contexts for the class include a single sherd from Kush in Phase E-05 related to the 8th/9th century (Kennet, 2004: 59, table 3), some finds from the early 8th century site of Tulul al-Ukhaydir (Finster & Schmidt, 1976: 148) and one sherd from 8th century levels at al-Qusur (Patitucci & Uggari, 1985: 195, 204, tav. LX, b).

Origin: Southern Mesopotamia.

50. TORP.1-4 (Torpedo Jars, Groups 1 - 4)

Fabric No: 40, 41, 42 & 43

Kennet Class: TORP (not sub-divided in Kennet's classification)

Basis of Grouping: Vessel category and fabric.

Defining Characteristics: Tall elongated pod shaped jars with pointed bases and narrow mouths with a fattened collar. The fabric is light yellow to orange and has a fine gritty and often rather crumbly texture. The interiors a generally coated with black bitumen. Most types have pronounced throwing lines on the exterior. The class is made up of four sub-types each defined by consistent variations in fabric and in some cases, particular sub-class specific forms.

TORP.1 – (4 Sherds) Yellow fabric (Fabric 40) which appears to be the same as that found on HONEY (see Plate 64).

TORP.2 – (63 Sherds) Yellow fabric (Fabric 41), thin walled vessels (see Plate 65).

TORP.3 – (16 Sherds) Coarse sandy orange-brown fabric (Fabric 42), thick walled vessels (see Plate 66).

TORP.4 – (9 Sherds) Fine orange fabric (Fabric 43), thick walls (see Plate 67).

Coherence: Each of the sub-classes is coherent.

Decoration: None.

Further Information: The associations that have been noted between TORP.2 and a sample from Kush, and between TORP.3 and a sample from Sir Bani Yas, both on the opposite shores of the Persian Gulf (see fabric forms), provide some indication of the potential widespread distribution of the different sub-classes. This appears to be a class that would be particularly amenable to scientific techniques of fabric characterisation and one that could yield particularly significant results, especially given the supposed function of the vessels in the transportation of commodities from southern Mesopotamia through the Persian Gulf during the late Sasanian and early Islamic era; a time when other sources of evidence for commercial history are generally lacking.

Form(s)	Description	Rim	Body	Base	H	W	D	T
TOR.1: 01	Tall narrow necked jars	Narrow mouth with rounded collar	Tall elongated with strong throwing rings	Small pointed teat shaped	c.100 cm	c.35cm	9 - 10cm	0.7 - 0.8cm
TOR.2: 01	Tall narrow necked jars	Narrow mouth with rounded collar	Tall elongated thin walls, very strong throwing rings	Small button base	c.100 cm	c.35cm	10 - 11cm	0.6 - 0.8cm
TOR.3: 01	Tall narrow necked jars	Narrow mouth with rounded collar	Tall elongated thick walls, insignificant throwing rings	Squared butted	c.100 cm	c.35cm	12cm	0.9 - 1cm

TOR.4: 01	Tall narrow necked jars	Narrow mouth with rounded collar	Tall elongated thick walls, insignificant throwing rings	square butted + short rounded	c.100 cm	c.35cm	9cm	0.9 - 1.1cm

Parallels and Dating: TORP sherds occur at Kush particularly between Phases W-03 - E-04 dated to between the 4th - 9th centuries, although finds of TORP jars at ed-Dur suggest that the class was also manufactured during the Parthian period from the mid 2nd century BC (Kennet, 2004: 63, table 3; Kennet, pers. comm. 2005).

Origin: Southern Mesopotamia.

51. TRC.1-2 (Torpedo Related Class, Groups 1 & 2)

Fabric No: 40 & 42

Kennet Class: None.

Basis of Grouping: Fabric and vessel forms.

Defining Characteristics: Same fabrics as TORP.1 and TORP.3, but displaying an entirely different set of forms including short-necked jars and heavy open bowls with simple rims. One form is shared between the two TRC sub-classes (TRC: 01) but others are sub-class specific.

TRC.1 – (10 Sherds) Yellow fabric (Fabric 40) which appears to be the same as that found on HONEY and TORP.1 (see Plate 68).

TRC.2 – (11 Sherds) Coarse, sandy orange-brown fabric (Fabric 42) which appears to be the same as that found on TORP.3 (see Plate 69).

Coherence: Each of the sub-classes are coherent.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
TRC: 01	Lightly everted fattened rimmed jars	As before	Shouldered	?	c.50cm	c.30cm	9cm	0.6 - 0.8cm
TRC.1: 02	Necked jars with everted fattened & rounded rims	As before	Shouldered	?	c.60cm	c.35cm	11cm	0.9 - 1cm
TRC.1: 03	Necked jars with everted fattened & rounded rims and handles	As before	Shouldered with handle attached just below rim	?	c.28cm	c.30cm	17cm	0.8cm
TRC.1: 04	Heavy neckless jars	Simple, slightly fattened	Broad & rounded	?	c.70cm	c.53cm	17cm	1.4 - 2cm
TRC.2: 02	Heavy upright straight sided bowls	Simple	Upright & straight	?	c.30 - 20cm	50 - 30cm	50 - 30cm	1.2cm

Parallels and Dating: Stylistic similarities between TRC and TORP suggest that TRC should be dated to the same period (see TORP.1 above).

Origin: Southern Mesopotamia.

52. LIME (Coarse Lime Tempered Ware)

Fabric No: 17 **Illustration:** Plate 63 **Number of Sherds:** 12

Kennet Class: LIME.

Basis of Grouping: Fabric and vessel form.

Defining Characteristics: Dense semi-vitrified tan coloured ware with large sub-rounded lime inclusions. The vessels have a narrow neck with an inverted flat-topped rim and short vertical strap handles/loops on the outside. All of the vessels are closed and some have amphora-style knob-bases.

Coherence: A small but very consistent and readily recognisable class.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LIM: 01	Closed, inverted rimmed jars with handles	Inverted & flat on top, slightly fattened at lip	No shoulder, long expanding neck & body	Rounded knob	c.40 - 50cm	c.26 - 36cm	8 - 11cm	1.1 - 1.4cm

Parallels and Dating: A significant quantity of LIME sherds were recovered from the al-Mataf Mosque sequence from Phases II - VI dated to the 14th - 16th centuries (Kennet, 2004: 59, tables 7 & 8). A reduction in LIME sherds in the REC Phase of both the Mosque and Occupation areas suggests that these sherds may be residual and that the class went out of circulation before the abandonment of the site in the late 16th/early 17th century (Kennet, 2004).

Origin: Bahrain?

53. IRPW (Indian Red Polished Ware)

Fabric No: 63 **Illustration:** Plate 86 **Number of Sherds:** 44

Kennet Class: IRPW.

Basis of Grouping: Fabric, vessel forms, surface treatment.

Defining Characteristics: Fine, well-levigated, fully oxidised fabric with a conchoidal fracture and a bright orange burnished slip on the interior and exterior or the exterior only. The forms are small jars with characteristic complex everted rims and turned bases.

Coherence: Coherent class.

Decoration: Plain apart from fine incised or raised bands around the base, shoulder or rim zones. Rims tend to be delicately modelled with raised and depressed zones emphasising the form.

Further Information: The IRPW assemblage in the Williamson Collection is different to assemblages from India, which include a wider range of forms (Roa & Castirobia, pers. comm. 2002).

Form(s)	Description	Rim	Body	Base	H	W	D	T
IRP: 01	Everted rimmed jars	Everted & slightly down turned	Strong shoulders, well rounded	Low turned foot ring	c.14 - 18cm	c.15 - 24cm	10 - 18cm	0.2 - 0.55cm

Dating: When Williamson first identified IRPW at Bushehr, it was suggested that the class could be attributed to the 1st - 3rd century AD, based on a number of parallels drawn from Indian contexts. This dating provided one of the few potential sources for dating the occupation at Bushehr (Williamson, 1972d: 100 'type 2', fig. 5; Whitehouse & Williamson, 1973: 38-9, fig. 5 d-f). Since Williamson's initial recognition of IRPW in Near Eastern contexts, further finds have appeared in excavations at Suhar in Oman, Qana' in Yemen and Kush in the U.A.E. (Kervran, 1996: 38-43; Sedov, 1996: fig. 6, 8-9; Kennet, 2004: 65-66), indicating that it circulated not only within the Persian Gulf, but right around the Arabian Peninsula. At Kush, 39 sherds of IRPW were recovered from the stratified sequence. These were distributed between Phases E-01 - E-04 dated to between the 5th - 8th centuries, although the vast majority of pieces come from Phases E-03 - E-04 suggesting that it was most common during the 7th - 8th centuries (Kennet, 2004: table 3). Besides pushing the termination date for the class forwards, this evidence may be an indication that other IRPW finds from within the Persian Gulf and Western Indian Ocean are also later dated than had previously been believed (Kennet, 2004: 65-6).

Origin: Gujarat?

54. IRAB (Indian Red and Black)

Fabric No: 73 **Illustration:** Plate 88 **Number of Sherds:** 55

Kennet Class: IRAB.

Basis of Grouping: Fabric and vessel forms.

Defining Characteristics: Brittle, sandy textured, micaceous, reddish-brown earthenware with patchy black fire clouding. Interior and exterior surfaces are covered with a brick red slip, though this is often badly degraded and it is difficult to tell if all vessels were slipped. Quite a wide range of forms are represented, but the main ones are a broad, wide-mouthed cooking pot and a necked jar, both with strongly everted rims. The surfaces have a slight burnish or polish but this is usually worn away.

Coherence: Aside from the forms, which set this group apart from the locally-made coarse wares, the fine abrasive, sandy texture of the fabric and its micaceous quality, make this class easy to distinguish, even in very small fragments.

Decoration: Most vessels have a raised band or low cordon in the mid shoulder region accompanied by delicate incised rilling. Tops of rims are mostly plain but can have an incised groove. On two examples, the top of the rim has closely-spaced notches producing a 'pie crust' effect.

Further Information: There are a few sherds with the same forms and firing as IRAB but with an entirely different fabric. These have been included within the class, but the fabric is not described.

Form(s)	Description	Rim	Body	Base	H	W	D	T
IRB: 01	Everted rimmed cooking pot	Sharply everted, wide mouth	Sloping shoulders & low	Rounded	c.13 - 14cm	c.29 - 37cm	26 - 36cm	0.4 - 0.8cm
IRB: 02	Everted rimmed jars	Sharply everted, squared along edge	Shouldered, probably well rounded	Not known	c.22 - 32cm	c.24 - 37cm	14 - 17cm	0.5 - 0.7cm
IRB: 03	Small simple rolled rimmed jars	Everted half rolled 'S' profile	Shouldered, probably well rounded	Not known	c.20cm	c.29cm	24cm	0.8cm
IRB: 04	Narrow necked, club rimmed jars	Flaring with a short projecting collar	Shouldered, probably well rounded	Not known	c.15 - 21cm	c.14 - 19cm	10 - 13cm	0.4 - 0.8cm
IRB: 05	Small square rimmed jars	Rolled & squared along outer & upper edges	Unhouldered, straight expanding sides	Not known	c.14cm	c.13cm	12cm	0.35cm
IRB: 06	Lid bowls	Horizontal collar with a vertical lip	Open shallow	Rounded	5.5 - 6cm	26 - 28cm	26 - 28cm	0.7 - 0.9cm
IRB: 07	Everted rimmed dishes	Projecting flange	Open and shallow	Not known	c.6 - 7cm	22cm	22cm	0.5 - 0.6cm
IRB: 08	Half closed bowls	Everted & half rolled 'S' profile	Rounded body	Now known	c.13cm	24cm	22cm	0.7cm
IRB: 09	'Bobble' rimmed jars	Fattened, rounded, notched on the inside	Shouldered	Not known	c.17cm	c.18cm	10cm	0.5cm

Dating: The class has continued in production virtually unchanged for well over a thousand years. Dating evidence comes from the Kush assemblage where 39 sherds of IRAB were recovered distributed throughout the sequence, but with a particular concentration in the earliest phase, (W-01), dated to the $4^{th}/5^{th}$ century through to Phase E-03/E-04 dated to the $8^{th}/9^{th}$ century (Kennet, 2004: 66, table 3). Similar pottery has also been noted in Islamic levels in Bahrain dated to the 14th - 16th centuries (Frifelt, 2001: 87, 91, fig. 149, b, fig. 151) and from surface collections made at the site of al-Mataf, which was occupied between the 14th - 17th centuries (Hansman, 1985: fig. 11, a,c).

Origin: The class belongs to the cooking pot tradition of South Asia, were similar vessels were probably widely manufactured (Kennet, 2004: 66).

55. SBBW (Soft Black Burnished Ware)

Fabric No: 65 **Illustration:** None **Number of Sherds:** 26

Kennet Class: SBBW.

Basis of Grouping: Fabric and vessel forms.

Defining Characteristics: Soft, brittle, micaceous pottery that is reduced to a consistent dark grey and black in the core. Surfaces were originally burnished to a high polish but this has usually completely degraded. Most of the vessels are small jars with rolled or sharply everted rims. The fabric of SBBW is similar to IRAB except that it has been fully reduced.

Coherence: Coherent class.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SBB: 01	Short necked rolled rimmed jars	Everted and half rolled	Shouldered & rounded	Not known	c.15 - 20cm	c.24 - 36cm	12 - 22cm	0.5 - 1cm
SBB: 02	Steep sided small bowls	Squared lip & slightly fattened	Half closed	Not known	c.6cm	13cm	13cm	0.6cm

Dating: The class occurs in small quantities at Kush from Phase E-02 through the rest of the sequence but not at al-Mataf suggesting that it remained in circulation from the 7th - 13th centuries, but went out of circulation before the foundation of al-Mataf in the 14th century (Kennet, 2004: 66, table 3).

Origin: West coast India?

56. BPCR (Black Painted Coarse Red Ware)

Fabric No: Varied **Illustration:** Plate 89 **Number of Sherds:** 88

Kennet Class: Within the same tradition as PAINT but BPCR is not particularly brittle.

Basis of Grouping: Vessel forms and surface treatment.

Defining Characteristics: Generally coarse with large grits or chaff temper and a strong micaceous background. The fabric is also generally dense and predominantly oxidised although some pieces have reduced cores. The main factor that unites the class are the forms and decoration. Almost all examples come from thick-walled, medium-sized jars with strongly Everted rims, similar to but less intricate than IRPW rims and paralleled in other Indian classes. Most vessels are covered with a reddish-orange slip, which is often badly degraded and many have simple decoration comprised of black bands applied to the shoulder and/or rim interior.

Coherence: Forms and surface treatment are the main elements that unite the class; otherwise, there are major variations in fabric composition and firing indicative of many different productions.

Decoration: Either plain or with broad black bands (1.5 - 2cm) following the inside of the rim and a series of thinner bands (1 - 0.4cm) around the neck/shoulder junction. The shoulder can also occasionally have more complex designs including various radial motifs.

Further Information: Kennet misidentifies Williamson's Type 2a (Williamson, 1972d: 100) as IRPW (Kennet, 2004: 65) but it is far more likely to be a description of this class.

Form(s)	Description	Rim	Body	Base	H	W	D	T
BPC: 01	Everted rimmed jars	Everted, fattened & bevelled underside	Strong shoulders, well rounded	Not known	c.19 - 24cm	c.20 - 28cm	15 - 21cm	0.5 - 0.8cm
BPC: 01	Flaring rimmed jars	Sharply everted, thinned lip	Strong shoulders, well rounded	Not known	c.22 - 27cm	c.26 - 34cm	18 - 26cm	0.5 - 0.7cm
BPC: 01	Notched and squared rimmed jars	Notched of squared upper or outer edge	Strong shoulders, well rounded	Not known	c.15 - 27cm	c.16 - 34cm	12 - 24cm	0.4 - 1cm

Dating: No precise parallels have been noted for BPCR, however, in general it falls within the later Early Historic tradition that is well represented in Stein's finds from Baluchistan and Makran (Stein, 1929; 1931). A class with similar decoration but a brittle fabric, perhaps more characteristic of Indian production, occurs at Kush, where it is concentrated in two widely separated phases E-03 and E-11 dated to the 7th/8th and the late 16th/early 17th centuries respectively. The later group must be residual. Within the Williamson Collection BPCR mostly appears to occur in assemblages that contain IRPW or other classes dated to the Late Sasanian/Early Islamic period.

Origin: This pottery probably comes from the Sind or the Indus valley regions; it clearly does not originate in the Persian Gulf. Some of the simplest red and black wares from the excavation of Sehwan Sharif in Sind, Pakistan, bear some resemblance to the class, but the parallel is not precise (Kevran, 1999: 218, fig. 15, 4). Similarly, reasonably close parallels in concept can be found in some of the simple red and black wares that Stein collected both in Pakistani and Iranian Baluchistan and Makran (Stein, 1929; 1931; 1937[31]). The fact that no exact parallels have so far been identified is not surprising. Pottery from the modern region of Pakistan and southeast Iran tends to be varied and poorly dated; although throughout one can discern a unifying style of fabric, firing and design. Work in this region is still at an early stage and although there are a number of excavation reports available, a number of factors, including the stability of tradition, regional diversity and paucity of information, combine to make the question of further chronological or regional sub-division a highly problematic exercise (Morris, pers. comm. 2003). Given these factors, it is to be expected that a survey sample collected widely along the shores of Persian Gulf and imported to the area over a number of centuries, is likely to contain a wide degree of variation.

57. IRBS (Indian Red Burnished Slipped Ware)

Fabric No: Varied **Illustration:** None **Number of Sherds:** 12

Kennet Class: None.

Basis of Grouping: Vessel forms and surface treatment.

Defining Characteristics: Light grainy fabric with a strongly burnished brick-red slip. One piece has additional black painted decoration. The forms are simple medium-sized, rolled 'S' profile rimmed jars. Other one-off forms are represented including a bowl.

Coherence: The fabrics represented in this class are distinctive but vary considerably in finer detail. This class seems to represent a selection of material from a variety of productions.

Decoration: Mostly plain. One piece has a thick black band beginning at the junction between the neck and the shoulder and extending down from there.

Further Information: Mostly plain, light coloured fabric, light grey (10YR 7/2) especially for IRS: 01, but can also be pink (7.5YR 7/4) or red (2.5YR 6/6). The fabric feels hard, rough, slightly porous and average in weight. The inclusions in the light grey form include small (1 - 0.5mm), well-sorted, sub-rounded quartz at about 10% frequency, as well as smaller flecks (<0.5mm) of grog at about 3% frequency. The redder fabrics tend to be finer grained and more compact and contain very small (<0.5mm) black elements as well as occasional larger opaque white elements and grains of quartz.

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[31] This observation is based on the illustrated pottery and finds from the Stein Collection examined in the Ancient Near East Department of the British Museum.

Form(s)	Description	Rim	Body	Base	H	W	D	T
IRS: 01	Simple rolled rimmed jars	Simple 'S' profile	Sloping shoulders, rounded body	Not known	c.17 - 22cm	c.24 - 28cm	16 - 22cm	0.5 - 0.8cm
IRS: 02	Small rounded rimmed jars	Fattened exterior, rounded	Barrel shaped, unshouldered	Not known	c.14cm	c.13cm	11cm	0.5cm
IRS: 03	'Wedge' rimmed jars	Fattened & squared top, flaring lip	Probably has pronounced shoulders	Not known	c.16cm	c.22cm	18cm	0.9cm
IRS: 04	Shallow fat rimmed bowls	Fattened & flattened inside edge	Open, shallow	Not known	c.9cm	34cm	34cm	0.7cm

Parallels and Dating: Probably dated to the same period as IRPW.

Origin: West coast India?

58. FIRE (Fine Indian Red Ware)

Fabric No: Various fine red **Illustration:** Plate 87 **Number of Sherds:** 42

Kennet Class: FIRE. Because this is a generic class, it is by no means certain that the examples from Kush are the same as those represented in the Williamson Collection.

Basis of Grouping: Fabric quality and surface treatment.

Defining Characteristics: Assorted material from a number of different productions, all possibly Indian. Shared characteristics include very finely levigated mostly red and orange fabrics with a clean conchoidal fracture and slight traces of mica. Some examples have red slip mostly only on the exterior and black paint which is usually degraded.

Coherence: Mixed selection of loosely associated classes.

Decoration: As described above.

Further Information: This is a generic class, which is probably of limited value, though it may be significant that a similar set of wares remained unclassified at the end of the Kush pottery study (Kennet, pers. comm. 2003).

Form(s)	Description	Rim	Body	Base	H	W	D	T
FIR: 01	Steep sided bowls	Everted, simple pointed	Open, steep sided	Not known	c.11	26cm	26cm	0.5cm
FIR: 02	Flared rimmed jars	Simple, thin	Half closed	Not known	c.9cm	c.18cm	16cm	0.3cm

Parallels and Dating: Not known.

Origin: India or Pakistan?

59. PAW.FC (Fine Cream Bodied Handmade Painted Ware)

Fabric No: 19 **Illustration:** Plate 44 **Number of Sherds:** 287

Kennet Class: None.

Basis of Grouping: Fabric, surface treatment and vessel size.

Defining Characteristics: Very fine, light cream-coloured fabric with a soft soapy texture. Vessels are small and medium sized with thin walls. Most of the vessels are deep or shallow open bowls though some jars are also represented. The vessels have a thin clay-based wash applied either externally or over both surfaces. Most pieces are richly ornamented with clean geometric purple, brown or black painted decoration. Some bowls are painted on the interior but most vessels are left plain.

Coherence: Some variation in the decorative motifs and fabric, but generally coherent.

Decoration: Whole surfaces covered with thick geometric patterns executed in a crisp style.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FCB: 01	Small open bowls	Simple and thinned	Curved mid-depth	Flat or turned concave foot well	c.7 - 10cm	13 - 20cm	13 - 20cm	0.45 - 0.95cm
FCB: 02	Deep bowls and jars including handled forms	Simple or lightly everted & fattened	Jars shouldered, bowls upright	Flat or turned concave foot well	c.14 - 18cm	c.12 - 24cm	8 - 16cm	0.4 - 0.9cm

Parallels and Dating: Prehistoric (spot dated, Magee 15/07/2002) also the class compares well with finds from Stein's 1931-4 survey of Southern Iran examined by the present author in the Ancient Near East department of the British Museum.

Origin: Southern Iran?

60. PAW.FO (Fine Orange Bodied Handmade Painted Ware)

Fabric No: 20 **Illustration:** Plate 45 **Number of Sherds:** 185

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Very finely levigated, densely fired body with a soft soapy texture and a consistent light orange colour. The vessel forms include simple open bowls, jars and handled forms, all decorated with dark black, purple or brown pigment. The class is similar to PAW.FC but has an orange fabric and a different style of decoration.

Coherence: Coherent class.

Decoration: Common motifs in the decoration are chevrons and solid hanging triangles. More complex designs are contained within frames and include palmets, wavy lines and other designs.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FOB: 01	Simple open bowls	Simple and thinned, straight or everted	Medium to shallow	Flat or extended foot ring	c.6.5 - 15cm	13 - 32cm	13 - 32cm	0.5 - 0.9cm
FOB: 02	Jugs and jars	Simple everted or squared	Mostly shouldered	Flat or raised foot ring	c.20cm	c.18 - 28cm	8 - 20cm	0.4 - 0.9cm

Parallels and Dating: Prehistoric (spot dated, Magee 15/07/2002). As with PAW.FC the class compares well with finds from Stein's 1931-4 survey of Southern Iran examined by the present author in the Ancient Near East department of the British Museum.

Origin: Southern Iran?

61. PAW.LV (Fine Cream Bodied Handmade Painted Ware, Large Vessels)

Fabric No: 19, 20, 7 **Illustration:** Plate 46 **Number of Sherds:** 254

Kennet Class: None.

Basis of Grouping: Fabric, surface treatment and vessel size.

Defining Characteristics: Very fine cream (Fabric 19) or light orange coloured fabric (Fabric 20) similar to those represented in the smaller painted ware classes PAW.FC and PAW.FO. Vessel walls are thick and the decoration relatively simple. Some vessels are covered with a slip over the interior and exterior applied in a thin wash. The slip, where used, is a fine, light cream colour, which enhances the decoration, but does not contrast sharply with the underlying body.

Coherence: Coherent class.

Decoration: About 60% of the vessels are decorated with broad bands around the foot and neck body interface. More complex designs are also occasionally represented, particularly on bowls.

Form(s)	Description	Rim	Body	Base	H	W	D	T
PLV: 01	Medium sized open bowls	Mostly simple, some squared	Mid-depth & wall angle	Flat, rounded or flaring foot-ring	c.10 - 12cm	31 - 32cm	31 - 32cm	0.8 - 1cm
	Deep bowls	Simple	Steep & flaring	Flat	c.26cm	31cm	31cm	0.8cm
PLV: 02	Thick walled necked jars	Simple, vertical or everted	Shouldered	Low or high foot-ring	c.20 - 30cm	c.23 - 33cm	13 - 19cm	0.7 - 1.5cm

Parallels and Dating: Prehistoric (spot dated, Magee 15/07/2002).

Origin: Southern Iran?

62. PAW.BLR (Black on Red Handmade Painted Ware)

Fabric No: 24 **Illustration:** Plate 53 **Number of Sherds:** 11

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Thin walled, slightly uneven handmade beakers with a fine, hard and compact, well-levigated orange fabric. The surfaces are bright reddish-orange with black chevrons arranged in a horizontal band around the rim. The painted decoration appears slightly diffuse as though the vessel has been smoothed or burnished after the decoration was applied.

Coherence: Coherent class.

Decoration: Chevrons arranged in a horizontal band below the rim framed by straight bands above and below. The underlying red body produces an alternating black and red effect in the decoration.

Form(s)	Description	Rim	Body	Base	H	W	D	T
BLR: 01	Fine thin walled beakers	Simple, squared or thinned	Upright, flaring	Flat?	c.9 - 13cm	c.9 - 13cm	c.9 - 13cm	0.3 - 0.4cm

Parallels and Dating: The class appears to belong to the Chalcolithic or Bronze Age periods from the second half of the 4th millennium BC (spot dated, Magee 15/07/2002). Close parallels can also be drawn with the beaker forms, 'smudgy' chevron decoration, fabric colour and the scraped vessels surfaced found on the locally manufactured 'Black on Red Ware' recovered from Tepe Yahya, Period VA.I-II (Beale, 1986: 67, 70, 72, fig. 4.33-5) dated to the 4th millennium BC.

Origin: Southern Iran.

63. PAW.SCY (Soft Creamy-Yellow Bodied Handmade Painted Ware)

Fabric No: 22 **Illustration:** Plate 50 **Number of Sherds:** 101

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Soft powdery, chalky textured, orange-yellow coloured fabric with no visible inclusions. The decoration is usually badly degraded and either completely removed or visible as shadowy black traces or leached out deep yellow-orange lines. The vessels appear to be handmade or slow turned.

Coherence: Coherent class.

Decoration: Broad brown or black patterning, often cross-hatching or 'ladders' located mostly on the interior or upper portion of the exterior too.

Further Information: The group is not dissimilar in appearance to MGP.1 in fabric, surface finish, weathering and the use of cross-hatch decoration, however, the black paint does not stand proud of the surface, the forms are different and there are no traces of glaze. Decorative motifs are also slightly different.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SYB: 01	Small to medium sized open bowls	Simple, gently everted or sharply everted	Mostly shallow	Flat or squared foot-ring	c.8 - 17cm	20 - 42cm	20 - 42cm	0.8 - 1.4cm
SYB: 02	Small closed jars	Fattened & slightly everted	Sloping shoulders	Flat?	c.12 - 14cm	c.12 - 13cm	8 - 9cm	0.4 - 0.7cm

Parallels and Dating: The class is likely to be prehistoric and possibly Chalcolithic/Ubaid as almost all pieces come from site H200 on the Bushehr peninsula, which has not yet been located, but which Williamson mentions as being an Ubaid site (Whitehouse & Williamson, 1973: 35, Note 32).

Origin: Bushehr province?

64. PAW.CC (Coarse Cream Bodied Handmade Painted Ware)

Fabric No: 21 **Illustration:** Plate 47 **Number of Sherds:** 234

Kennet Class: None.

Basis of Grouping: Fabrics and surface treatment.

Defining Characteristics: Hard fired, coarse, grit tempered handmade or slow turned painted ware. Vessels are small and medium sized and include bowls, jars and handled forms. Decoration is bold and covers much of the vessel surface and is rendered in black or red iron pigment.

Coherence: The class is readily distinguishable from the fine-bodied PAW.FC and PAW.FO on the basis of the hard firing, presence of abundant grits and the lose style of decoration.

Decoration: Fast broad strokes filling large areas of the vessel, mostly exteriors though sometimes interiors on bowls. Lose lattice is the most common motif; less structured elements are also used widely.

Further Information: There are similarities between PAW.CC and certain elements of Julfar Ware. Beaker forms come close to the white speckled JUL.RC and bright orange jars and bowls with red painted decoration can be difficult to distinguish from orange forms of Julfar Ware.

Form(s)	Description	Rim	Body	Base	H	W	D	T
CCB: 01	Simple open bowls	Simple, fattened, rolled & everted	Shallow	Flat or squared foot ring	c.10 - 14cm	15 - 30cm	15 - 30cm	0.5 - 0.8cm
CCB: 02	Handled jars & jugs	Fattened, everted, sometimes notched	Sloping shoulders	Mostly flat	c.15 - 20cm	c.12 - 24cm	10 - 18cm	0.5 - 0.8cm
CCB: 03	Non-handled jars	Fattened, everted, rounded or notched	Sloping shoulders	Mostly flat	c.10 - 25cm	c.12 - 33cm	10 - 31cm	0.4 - 0.9cm
CCB: 04	Softly carinated beakers	Simple and thinned	Upright, curves in quickly below carination	Flat?	c.9 - 12cm	10 - 14cm	10 - 14cm	0.4 - 0.8cm

Parallels and Dating: Part of the widespread pseudo-prehistoric handmade painted ware tradition that can be dated to the 11th - 13th centuries (Whitcomb, 1991: 103).

Origin: Fars?

65. PAW.HC (Hard Cream Bodied Painted Ware)

Fabric No: 39 **Illustration:** Plate 48 **Number of Sherds:** 38

Kennet Class: None.

Basis of Grouping: Fabric and decoration.

Defining Characteristics: Similar to other cream bodied painted wares, PAW.SCY and particularly PAW.FC and PAW.CC, but the body is fine and hard and lacks the chalky texture of FAW.FC. The material has a slightly rough look, a greenish hue and slightly dull matt black decoration as well as incising. The pottery appears to be wheel made.

Coherence: Coherent although a larger sample may allow further division.

Decoration: Rich decoration covering large portions of the vessel. On bowls the exterior is usually left plain, though this can also be decorated. Designs include large zones of lattice, pseudo-calligraphic elements framed by solid or incised bands. Other strip motifs include chevrons and zigzag lines.

Form(s)	Description	Rim	Body	Base	H	W	D	T
HCB: 01	Closed jars	Not known	Rounded or carinated	Not known	c.20 cm	c.20 - 25cm	Not known	0.7 - 1.2cm
HCB: 01	Open bowls	Simple often pointed	Shallow or mid-depth	Not known	c.8 - 10cm	20 - 26cm	20 - 26cm	0.4 - 1cm

Parallels and Dating: Part of the widespread pseudo-prehistoric handmade painted ware tradition that can be dated to the 11th - 13th centuries (Whitcomb, 1991: 103).

Origin: Fars?

66. PAW.SCC (Soft Cream Bodied Handmade Painted Ware)

Fabric No: 25 **Illustration:** Plate 49 **Number of Sherds:** 39

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Heavily gritted, soft friable, cream coloured fabric with black or reddish brown iron based decoration, executed in a mannered, sometimes very fine and intricate style. Vessels are handmade and often left rough on the inside. Handles vessels are common.

Coherence: Coherent class.

Decoration: Patterns are elaborate, especially on thin walled vessels, which have very fine, thin lined motifs.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SCC: 01	Handled jars	Simple, slightly everted	Long expanding neck, widest towards base	Flat?	c.14 - 16cm	c.13 - 23cm	10 - 15cm	0.5 - 0.8cm

Parallels and Dating: Part of the widespread pseudo-prehistoric handmade painted ware tradition that can be dated to the 11th - 13th centuries (Whitcomb, 1991: 103).

Origin: Fars?

67. PAW.ORG (Organic Tempered Handmade Painted Ware)

Fabric No: 30 **Illustration:** Plate 51 **Number of Sherds:** 5

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Soft chalky-textured fabric with occasional solid inclusions and numerous fibrous voids left by burnt out organic material. The pottery is painted with black and is very similar to PAW.SCC but has less grit and an organic temper. The pottery appears to be handmade or slow turned, one piece appears to be thrown.

Coherence: Coherent although handmade and thrown pieces are included in the same class.

Decoration: Fairly complex ordered motifs including pseudo-calligraphic elements.

Form(s)	Description	Rim	Body	Base	H	W	D	T
ORG: 01	Simple open bowls	Simple	Sallow or steep sided	Flat	4.5cm	14cm	14cm	0.9cm
ORG: 02	Closed forms	Not known	Rounded	Not clear	c.20 - 27cm	c.23 - 35cm	Not known	1 - 1.6cm

Parallels and Dating: Part of the widespread pseudo-prehistoric handmade painted ware tradition that can be dated to the 11th - 13th centuries (Whitcomb, 1991: 103).

Origin: Fars?

68. PAW.RB (Red on Brown Handmade Painted Ware)

Fabric No: 23 **Illustration:** Plate 52 **Number of Sherds:** 57

Kennet Class: None.

Basis of Grouping: Surface treatment and production technique.

Defining Characteristics: Uneven, thin walled, reddish-brown, handmade pottery with heavily burnished surfaces and thin lines of red decoration. The decoration is comprised of well spaced, loosely structured meandering lines.

Coherence: Coherent class.

Decoration: Medium to thin, iron red pigment lines, arranged in meandering tendril-like configurations. Some vessels have more structured elements like dots or wavy lines. Decorated on the exterior only but burnished on the interior and exterior.

Further Information: The are similarities between some of the vessels in this class and CHAM.3.

Form(s)	Description	Rim	Body	Base	H	W	D	T
REB: 01	Closed bell shaped jars	Simple, gently everted	Long sloping neck , wide towards base.	Rounded ?	c.13 - 30cm	c.26 - 34cm	18 - 26cm	0.4 - 0.5cm
REB: 01	Small open bowls	Simple, slightly everted	Mid-depth	Flat?	c.7cm	18cm	18cm	0.7cm

Parallels and Dating: Part of the widespread pseudo-prehistoric handmade painted ware tradition that can be dated to the 11th - 13th centuries (Whitcomb, 1991: 103).

Origin: Fars?

69. PAW.BST (Brittle Stone Tempered Handmade Painted Ware)

Fabric No: 26 **Illustration:** Plate 54 **Number of Sherds:** 97

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Hard and thin walled, clinky-fired brittle brown fabric tempered with abundant coarse angular stone grits and in some cases fragments of lime. Vessels are handmade and the surfaces are murky orange with patches of fire clouding. Decoration consists of red bands and washes, overlain with black lines.

Coherence: Many of the sherds are similar enough to be from one vessel, however more than one vessel is clearly represented. Very coherent and distinctive class.

Decoration: Bands or large areas, (often the entire vessel exterior), covered in washes of red, iron-based pigment overlain with bands of black often framing wavy bands or short chevrons.

Form(s)	Description	Rim	Body	Base	H	W	D	T
BST: 01	Handled or unhandled jars	Flaring mouth with a pointed or thickened lip, some with simple rolled rim	Shouldered with a rounded body, some handled	Flat or recessed foot well	c.15 - 17cm	c.16 - 22cm	9 - 16cm	0.4 - 0.6cm

Parallels and Dating: Recent survey in the Minab and Rudan suggested that PAW.BST may be associated with FOPW of the 3rd - 6th centuries at PK16 in the Rudan area, although the presence of a few 11th - 13th century glazed ware sherds at the site mean that it is not possible to rule out a later date for the class (Kennet *et al,* Forthcoming).

Origin: Southern Iran.

70. PAW.SA (Fine Sandy Handmade Painted Ware)

Fabric No: 29 **Illustration:** Plate 55 **Number of Sherds:** 16

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Hard orange fabric with a very fine sandy texture and thin degraded dark red or maroon coloured decoration on a plain buff surface. Vessels appear to be handmade or slow turned.

Coherence: Coherent class.

Decoration: Broad bands and in-filled areas with wavy lines, dots and other devised between.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SA: 01	Medium sized jars	Not known	Rounded	Flat?	c.20cm	c.25cm	Not clear	0.7cm

Parallels and Dating: Part of the widespread pseudo-prehistoric handmade painted ware tradition that can be dated to the 11th - 13th centuries (Whitcomb, 1991: 103).

Origin: Southern Iran.

71. HMP.N-ID (Non-Identified Handmade Painted Wares)

Fabric No: Various **Illustration:** None **Number of Sherds:** 61

Kennet Class: None.

Basis of Grouping: Surface treatment and production technique.

Defining Characteristics: Assorted handmade painted wares, which cannot be assigned to any particular class. Fabric, firing and designs tend to be quite varied ranging from the hard bodied prehistoric styles with shaved surfaces to the very soft grit-tempered medieval painted ware types.

Coherence: Disparate class.

Decoration: Various.

Parallels and Dating: Not known.

Origin: Southern Iran?

72. WMP.N-ID (Non-Identified Wheel-Made Painted Wares)

Fabric No: Various **Illustration:** None **Number of Sherds:** 21

Kennet Class: None.

Basis of Grouping: Surface treatment and production technique.

Defining Characteristics: Assorted, unglazed wheel-made painted wares that cannot be assigned to any particular class.

Coherence: Disparate class.

Decoration: Various.

Parallels and Dating: Not known.

Origin: Southern Iran?

73. FOPW.1-4 (Fine Orange Painted Ware, Groups 1 - 4)

Fabric No: 60, 61, 62

Kennet Class: FOPW. Kennet's sub-category FOPW.2 was not recognised in the present classification. Instead, the class was sub-divided into: FOPW.1, which is the same as the FOPW from Kush; FOPW.2, which has a slightly coarse fabric and minimal decoration, but which is not the same as Kennet's FOPW.2; FOPW.3, which has a different decorative scheme than the FOPW from Kush that is closely paralleled in the material from Tepe Yahya, and FOPW.4, which is degraded and non-identifiably.

Basis of Grouping: Decorative scheme, form and fabric.

Defining Characteristics: Finely-levigated, dense, orange fabric which is either plain or covered with a bright reddish-orange slip and black painted decoration. The walls tend to be thin and the surfaces are often, though not always, burnished on the interior and exterior. The most common form is a tall, straight-sided beaker with a flaring rim and a flat base or a small globular jar with either a flat base or a thin flaring foot-ring. Beakers often have small-perforated handles just below the rim, which were probably used for the attachment of a cord.

FOPW.1 – (330 Sherds) The class has a hard, fine orange fabric (Fabric 60) and is generally covered with a bright orange to red slip and decorated with filled lozenges framed by straight bands situated above the foot and below the lip of beakers and around the neck of jars. Wavy bands framed by straight bands are also common. Jars tend to have a simpler decorative scheme comprised mostly of thick bands. Some pieces have thin, washy-looking decoration on the interior that Williamson refers to as a "shadow image" produced by the transfer of decoration between vessels stacked within one another during firing (Williamson, 1972d: 99). This does not seem the most likely explanation, for although it is difficult to make sense of the internal decoration; the surfaces of the vessels are burnished with the black paint sealed below the burnished layer (see Plate 60).

FOPW.2 – (220 Sherds) Similar attributes to FOPW.1 except that the fabric has a slightly coarse appearance (Fabric 61). Decoration tends to be in thin, shadowy washes with more basic schemes than FOPW.1 and is comprised of broad bands with more complex motifs framed by bands in the shoulder region, including wavy bands, lozenges and a thick ladder motif. A few pieces have incised rilling above and below the shoulder. The sub-class displays little sign of a slip though some do have a dark orange wash, which is found only on the exterior of the jar form and on both the interior and exterior of the beaker. Within this sub-class the globular jar form appears to be more common than the beaker (see Plate 61).

FOPW.3 – (89 Sherds) Similar to FOPW.1, very fine-bodied (Fabric 62), thin-walled beakers with or without slip and over-painted with black decoration. The main difference is that the surfaces all have a high burnish leaving a soft shiny finish, which can be detected even when the material is degraded. Both interior and exterior surfaces are burnished, although on the exterior the action is vertical leaving distinctive striations. Decorative motifs are also different to those found on FOPW.1. Lozenges are almost completely absent; instead, the predominant motifs are hanging volutes below the rim bordered by solid bands, tight wavy bands used either loose or as frames and panels with fringed borders. The style of FOPW.3 is markedly different to FOPW.1 or FOPW.2 (see Plate 62).

FOPW.4 – (68 Sherds) FOPW with fine or slightly coarse fabric (Fabric 60 & 61) that cannot be assigned to any particular group because it is too degraded (no illustration).

Coherence: Some variation in slip colour and decorative style. The most difficult distinction to maintain is between FOPW.1 and FOPW.2, especially with degraded pieces, however in general the division appears to be consistent and probably meaningful.

Decoration: See sub-class descriptions.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FOP.1: 01	Beakers	Very slightly fattened, gently everted	Flaring mouth, straight sides	Flat	c.11 - 17cm	7 - 13cm	7 - 13cm	0.2 - 0.5cm
FOP.1: 02	Globular jars	Very slightly fattened, gently everted	Long neck, sloping shoulders, rounded belly	Flat	c.12 - 16cm	c.11 - 16cm	8 - 12cm	0.3 - 0.6cm
FOP.1: 03	One off forms	Various	Various	Various	N/A	N/A	N/A	N/A
FOP.2: 01	Beakers	Very slightly fattened, gently everted	Flaring mouth, straight sides	Flat,	c.14 - 17cm	9 - 13cm	9 - 13cm	0.2 - 0.5cm
FOP.2: 02	Globular jars	Very slightly fattened, gently everted	Long neck, sloping shoulders, rounded belly	Flat or with a delicate flaring foot-ring	c.12 - 16cm	c.11 - 16cm	8 - 12cm	0.2 - 0.6cm
FOP.2: 03	One off forms	Various	Various	Various	N/A	N/A	N/A	N/A
FOP.3: 01	Beakers	Very slightly fattened, gently everted	Flaring mouth, straight sides	Flat	c.13 - 16cm	14 - 17m	14 - 17cm	0.25 - 0.6cm

Parallels and Dating: The class does not appear to be dated earlier than the 3rd century based on its occurrence in Period 1 of Area F at ed-Dur (Potts, 1998: 209). At Kush FOPW is concentrated primarily within Phases W-01 - E-01 dated to between the 4th - 6th centuries (Kennet, 2004: table 3). This evidence contradicts the suggestion by Potts' that FOPW went out of circulation by the 4th century (Potts, 1998). The FOPW from Kush corresponds with FOPW.1, whereas FOPW.3 corresponds very closely to the FOPW recovered from Tepe Yahya Level I (Lamberg-Karlovsky, 1970: 10, fig. 4, i-m). Interestingly FOPW.3 mostly comes from inland sites closer to the Tepe Yahya area.

Origin: Williamson collected FOPW from 25 different sites, of which 20 come from the Minab, Halil-Rud and Rudan areas in Hormuzgan and Kerman provinces. Together the sherds from these 20 sites make up 99% of the FOPW assemblage. During Stein's survey of southern Iran he recorded 11 sites with FOPW, nine of which come from Kerman province and 2 from Iranian Baluchistan. Stein's sites have been recorded from a combination of published plates (Stein, 1937: pl XX 3, 4, 6, 10 though this could equally be LONDO ware, 36, 46, pl XXVII 20 & pl XXV 15, 20), site descriptions (Stein, 1937: 141-42), and finds that were personally examined during a study of the Stein Collection in the British Museum. Four sites were also identified by Sajjadi in the Rudbar area, two of which had already been noted by Stein (Sajjadi, 1989). In the Soghun Valley area, FOPW occurs at Tepe Yahya (Lamberg-Karlovsky, 1970: fig. 4, a, d, e, i-m). On the opposite shores of the Persian Gulf, FOPW has been recovered from Kush (Kennet, 2004: 61-62, fig. 34), ed-Dur (Lecomte, 1993: 200, fig.12, 1-4; Potts, 1998: figs. 2, 8), Mleiha (Benoist, Mouton & Schiettecatte, 2003: 71, fig. 9, 2,3), Qala'at al-Bahrain (Hojland & Andersen 1997: 213-15, fig. 886-896) and from one or possibly two sites on the Masandam Peninsula in northern Oman (de Cardi, 1975, 57-58, fig. 9, 41-62). Together the evidence suggests that FOPW originated in southeast Iran and that small quantities were traded predominantly within the Lower Persian Gulf although outlying pieces have been noted at Bushehr and Qana' in Yemen (Sedov, 1996: 21-23, fig. 6, 2-7).

74. JUL (Julfar Ware)

Fabric No: 34 **Illustration:** Plate 59 **Number of Sherds:** 152

Kennet Class: Kennet sub-divided the class into five groups based on fabric colour and surface treatment. JULFAR.3 and JULFAR.4 probably correspond with this class, however JUL is a generic class and the most precise parallels are between specific forms (see below).

Basis of Grouping: Fabric and forms.

Defining Characteristics: Handmade or slow-turned cooking pots, bowls and jars made from a coarse orange/red or grey fabric with a rough, hackly fracture, containing frequent and distinctive small sub-angular red or black platelets. The surfaces are either black or bright orange and can be plain or decorated with simple splashes or lines. The class is comprised of JULFAR.3 & 4 in Kennet's classification (Kennet, 2004: 53), though here no distinction has been drawn between black and red bodies as most forms crosscut the fabric colour division.

Coherence: Coherent but with an extensive range of types.

Decoration: Decoration tends to be specific to form.

JU: 01 – None apart from a continuous raised band just below the rim and often protruding slightly more on opposing sides to form two handles
JU: 02 – Top and inside of rim often painted solid red with dots or lines radiating from the centre, on top of an orange red or grey body.
JU: 03 – Plain or broad simple oblique or near-vertical stripes below the rim or across the body.
JU: 04 – Mostly plain, some have a purple band following the top of the rim. One sherd has an incised wavy band just below the rim.
JU: 05 – Mostly plain, one piece has purple on the rim, which has run heavily.
JU: 06 – Plain or with a purple band covering the rim and running onto the body.
JU: 07 – Purple splashed rims and oblique lines across the shoulder.
JU: 08 – Plain on exterior. Broad splashed purple band on upper rim edge. Some evidence of more elaborate internal decoration.
JU: 09 – Splashed purple around rim. Some crude 'blobby' decoration on the body, though most are probably plain.
JU: 10 – None.
JU: 11 – None.

Further Information: The Julfar assemblage as a whole, including the other sub-classes listed below, appears to have been selected by Williamson as it does not contain the usual composition of forms and types that one would expect to find. In particular, there are only a few of Kennet's forms CP4.1 & 2 with notched rims in the Collection, whereas this is normally one of the most common forms. There is also a higher amount of JUL.PB. in the assemblage than one might expect to find, especially as this has always been a rather ambiguous and difficult group to define (Kennet, pers. comm. 2002). Conceivably these differences could also reflect contrasts in the circulation of Julfar ware on the Arabian and Persian shores of the Gulf.

Form(s)	Description	Rim	Body	Base	H	W	D	T
JU: 01	Cooking pots	Fattened & simple or with a heavy platform	Closed with a continuous band below the rim	Not clear	c.15 - 20cm	24 - 35cm	20 - 30cm	0.5 - 0.6cm
JU: 02	Shallow dishes	Flanged	Thin shallow walls	Pronou-nced foot-ring	c.3.5 - 5cm	15 - 24cm	15 - 24cm	0.3 - 0.7cm

JU: 03	Cooking pots	Everted & notched, lidded?	Rounded or with a slight shoulder	Not clear flat?	c.15 - 18cm	c.22 - 24cm	14 - 17cm	0.4 - 0.7cm
JU: 04	Cooking pots	Inverted, 'tear drop' form	Rounded, sometimes lugged	Not clear	c.10 - 20cm	c.20 - 34cm	16 - 27cm	0.3 - 0.5cm
JU: 05	Cooking pots	Curved and simple with a heavy internal notch	Often lugged at widest point or lower	Not known	c.10 - 15cm	c.17 - 30cm	14 - 20cm	0.4 - 0.6cm
JU: 06	Steep sided closed bowls or cooking pots	Rounded exterior, sharp & faceted interior	Upright & rounded	Not clear	c.12 - 15cm	c.22 - 28cm	14 - 24cm	0.2 - 0.5cm
JU: 07	Protruding rimmed closed bowls	Everted & heavily protruding	Closed & rounded	Not clear	c.13 - 19cm	c.19 - 31cm	14 - 20cm	0.3 - 0.6cm
JU: 08	Protruding rimmed open bowls	Everted heavy rim	Open & thick walled	Not clear	c.7 - 8cm	21 - 29cm	21 - 29cm	0.7 - 0.8cm
JU: 09	Vertical rimmed jars	Flat/concave interior, fattened exterior	Slight shoulders	Not clear	c.15 - 17cm	c.20 - 22cm	16 - 18cm	0.4 - 0.5cm
JU: 10	Heavy rimmed storage jars	Heavy with a sharp triangular profile	Rounded & globular, sometimes shouldered	Flat?	c.15 - 20cm	c.28 - 33cm	12 - 15cm	0.5 - 0.7cm
JU: 11	'Fish dishes'	Fattened & rounded	Open & flat	Flat	1.5cm	24 - 26cm	24 - 26cm	0.6cm

Parallels and Dating: JUL occurs from the Phase E-10 at Kush with the emergence of the cooking pot form CP1.2 and continues throughout the 14th - 17th century levels at al-Mataf and up until the mid 20th century when the industry finally died out. Although JUL could date to any time within this range, it is most likely to belong to the 14th - 17th centuries when the industry reached the peak of its production (Kennet, 2004: 53-4, tables 21, 23). Specific parallels can also be drawn to a number of the individual forms.

JU: 01 – Slightly different fabric to other Julfar Ware types but the form has been noted elsewhere (Kennet, 2000: fig. 111).
JU: 02 – No known parallels.
JU: 03 – Same as Kennet's CP4.1 and CP4.2 (Kennet, 2004: fig. 23).
JU: 04 – Same as Kennet's CP1.1 with some pieces tending towards CP5.1 (Kennet, 2004: figs. 21 & 24).
JU: 05 – Same as Kennet's CP5.1 except that these have handles (Kennet, 2004: fig. 24; Hansman, 1985: fig. 14, k).
JU: 06 – Possible the same as one of Hansman's types (Hansman, 1985: fig. 14, i).
JU: 07 – No known parallels.
JU: 08 – Same as one of Hansman's types (Hansman, 1985: fig. 15, e-i, fig.6, d).
JU: 09 – No known parallels.
JU: 10 – No known parallels, possibly similar to Kennet's CP2.2 but this has no rim fattening (Kennet, 2004: fig. 21).
JU: 11 – No known parallels.

Origin: Northern Ras al-Khaimah.

75. JUL.PB (Purple and Black Julfar Ware)

Fabric No: 34 **Illustration:** Plate 58 **Number of Sherds:** 57

Kennet Class: JULFAR.2 (see JUL for further details).

Basis of Grouping: Surface treatment and vessel forms.

Defining Characteristics: A dark-grey version of handmade or slow-turned JUL with thin brittle walls. Often decorated with a splashed band of purple around the rim, though there are also plain examples. The vessels often have fine pointed handles attached just below the rim, a feature that is particular to this particular sub-class. Some vessels also have bands of short deep incisions around the waist or on the rim, a feature that is also occasionally seen in JUL but never in JUL.RW.

Coherence: Coherent in terms of fabric but forms and decoration display some overlap between JUL and JUL.PB.

Decoration: As described above.

Form(s)	Description	Rim	Body	Base	H	W	D	T
PBJ: 01	Cooking pot	Clubbed & everted	Often handled, saggy profile	Not known	c.13cm	c.22 - 24cm	16 - 20cm	0.3cm
PBJ: 02	Cooking pot	Gently fattened	Often handled, saggy profile	Not known	c.8 - 12cm	c.16 - 28cm	11 - 22cm	0.2 - 0.5cm
PBJ: 03	Cooking pot	Clubbed & everted	Unshouldered saggy profile	Not known	c.14cm	c.28cm	22cm	4.5cm
PBJ: 04	Open bowl	Up-turned & squared	Shallow	Not known	c.4cm	22cm	22cm	0.3cm
PBJ: 05	Water pipe fragments	Everted & gently squared	Sharp shouldered, long neck	Not known	Not known	c.16cm	5cm	0.5 - 0.7cm

Parallels and Dating: This class, which is equivalent to Kennet's JULFAR.2 is concentrated between Phases II - VI in the al-Mataf Mosque sequence dated to between the 14th - 16th centuries (Kennet, 2004: 53, table 7). Specific parallels can also be drawn to a number of the individual forms.

PBJ: 01 – Same as Kennet's form CP2.1 (Kennet, 2004: fig. 21; Hansman, 1985: fig.14, i), also similar to some examples of JU: 06.

PBJ: 02 – Similar to Kennet's forms CP2.2 or CP1.1 (Kennet, 2004: fig. 21), especially the non-handled versions, however some of the rims are thicker. Close parallels for the handled version can also be found (Hansman, 1985: fig. 14, j). The form is the same as JU: 04.

PBJ: 03 – Same as JU: 07

PBJ: 04 – Looks similar to Kennet's B7.1 (Kennet, 2004: fig. 25) but this is a more elaborate example.

PBJ: 05 – No parallels

Origin: Northern Ras al-Khaimah.

76. JUL.RW (Red and White Julfar Ware)

Fabric No: 34 **Illustration:** Plate 56 **Number of Sherds:** 76

Kennet Class: JULFAR.1 (see JUL for further details).

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: The sub-class is easy to distinguish from other types of JUL as the surfaces are washed all over with a thin white slip and painted with stripes of red. There are also subtle differences in the quality of the fabric, which tends to be fired to a darker red and to have a particularly brittle, granular quality.

Coherence: One of the most distinctive and coherent Julfar Ware sub-classes.

Decoration: Large areas covered with a thin white slip over-painted with red bands. Some vessels have plain areas and one bowl has blocks of lines running in opposing directions.

Form(s)	Description	Rim	Body	Base	H	W	D	T
RWJ: 01	Jugs	Fattened & flaring, thin neck	Deep & rounded with a handle & spout	Flat or concave	24cm	16cm	9cm	0.5cm
RWJ: 01	Cooking pot	Everted with a notch in the top	Unshouldered	Not known	c.18cm	c.23cm	15cm	0.6cm
RWJ: 01	Bowls	Not known	Shallow	Flat	c.7cm	c.27cm	c.27cm	0.5cm

Parallels and Dating: The class, which is equivalent to Kennet's JULFAR.1, occurs from Phases II - REC of the al-Mataf Mosque sequence dated to the between the 14th - 17th centuries (Kennet, 2004: 53, table 7). Specific parallels can also be drawn to a number of individual forms.

RWJ: 01 – Exact parallels can be found in Hansman's 'poring vessels' (Hansman, 1985: fig. 17, a-h, especially h).
RWJ: 01 – Same as JU: 03.
RWJ: 01 – Form based on one base sherd.

Origin: Northern Ras al-Khaimah.

77. JUL.RC (Julfar Ware Related Class)

Fabric No: 35 **Illustration:** Plate 57 **Number of Sherds:** 69

Kennet Class: None.

Basis of Grouping: Fabric and vessel forms.

Defining Characteristics: Similar grainy fabric to JUL but with fewer red platelets, a greater quantity of fine lime specks and a finer more compact structure. The structure of the fabric, together with the absence of platelets, may be due to more advanced sintering caused by a change in the firing regime, such as an increase in the temperature or duration. Vessel forms in this sub-class are mostly different to the other Julfar Ware forms and appear to be thrown.

Coherence: Coherent and readily recognisable class.

Decoration: Mostly plain. Some jars and beakers/goblets have broad purple bands or a band beneath and on the inside of the rim. Bowls can be plain or have a purple band on the inside of the rim. Two bowl sherds have further simple decoration on the interior. A number of vessels, mostly bowls and flared rimmed jars, have a striking bichrome effect with dusky grey on the exterior and a deep orange-red on the interior. This is probably achieved by firing the vessels in an inverted position or rim-to-rim so that the interior is sealed to the effects of a late firing reduction.

Further Information: This industry clearly has a number of qualities that link it to JUL, however it has not been noted in the excavated sequence from Julfar (Kennet, 2004: 53-7, figs. 19-25; Hansman, 1985: 60-6, figs. 14-7). This suggests that it is a production that postdates the abandonment of the site in the 17th century.

Form(s)	Description	Rim	Body	Base	H	W	D	T
JRC: 01	Heavy jars with flaring rims	Simple everted	Rounded with pronounced shoulders, sometimes handled	Not known	c.15 - 20cm	c.24 - 32cm	14 - 26cm	0.3 - 0.7cm
JRC: 01	Open bowls	Everted, flat on top	Shallow, curving walls	Not known	2 - 10cm	18 - 28cm	18 - 28cm	0.4 - 0.6cm
JRC: 01	Carinated beakers	Simple, thinning, fattened exterior	Long covetto, recedes below carination	Not known	c.7 - 9cm	12 - 16cm	12 - 16cm	0.2 - 0.5cm
JRC: 01	Necked jars	Everted & fattened	Long neck and shouldered	Not known	c.24 - 26cm	c.11 - 14cm	8 - 10cm	0.4 - 0.7cm

Parallels and Dating: This style of Julfar Ware does not occur in the al-Mataf sequence and must therefore be dated to the post al-Mataf period from the late 17th - mid 20th century when the Julfar Ware industry finally came to an end (Kennet, pers. com. 2002).

Origin: There are certain differences in the fabric in this post al-Mataf class which may indicate that it was not manufactured in Ras al-Khaimah. Alternatively this class might represent the latest phase of production in Ras al-Khaimah, with certain change in the fabric recipe or firing regime.

78. SLIP.PBR (Painted Brown Slipped Ware)

Fabric No: 46 **Illustration:** Plate 85 **Number of Sherds:** 60

Kennet Class: None.

Basis of Grouping: Surface treatment and feel.

Defining Characteristics: Fairly fine, hard oxidised orange fabric with brown-slipped and heavily burnished surfaces over-painted in black. Can be black and brown or bichrome with brown/red slip and black lines, which contrast with zones of the bare, light-coloured fabric. Sherds often have a soft soapy feel.

Coherence: Coherent class.

Decoration: Simple broad bands, chevrons, palmettes and lattice type arrangements. Strong contrast between the light colour of the body, the brown/red slip and the black decoration.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SPB: 01	Shallow, everted rimmed bowls	Sharply everted, rounded lip	Open shallow	Not clear	c.8cm	22cm	22cm	0.4 - 0.8cm
SPB: 02	Jars	Not known	Sloping shoulders, rounded body	Not known	Not known	Not known	Not known	0.4 - 0.8cm

Parallels and Dating: A similar class has been noted at ed-Dur from surface finds collected from Area K during an early survey of the site (C. Phillips, pers. comm. 16/07/2003).

Origin: Southern Iran?

79. SLIP.B (Coarse Black-Slipped Ware)

Fabric No: 44 **Illustration:** Plate 84 **Number of Sherds:** 42

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Reduced, coarse grey fabric with a patchy matt-black slip covering all surfaces. Closed and open vessels are represented, the range of forms is wide but the style as a whole is distinctive. Most vessels are medium sized but large and small vessels are also present.

Coherence: Coherent class.

Decoration: Smaller bowls are usually plain but sometimes have incised wavy bands framed by straight bands below the rim. The same is true for closed forms, though there are decorated examples with raised ridges combined with deeply incised wavy bands. One piece has a short section of rilling.

Further Information: Some of the bowl forms are similar to those in SMAG.RC, as are the strong throwing lines and presence of black slip. The fabric is however clearly different.

Form(s)	Description	Rim	Body	Base	H	W	D	T
BS: 01	Medium to large open bowls	Fattened, everted, clubbed or vertical	Open	Not clear	c.7.5 - 15cm	18 - 33cm	18 - 33cm	0.5 - 1cm
BS: 02	Small, medium & large closed jars	Everted or straight & notched	Shouldered or barrel form	One raised pedestal foot-ring	c.12 - 50cm	c.16 - 40cm	14 - 40cm	0.4 - 1.5cm

Parallels and Dating: The class occurs in the fortress area of Qasr-i Abu Nasr, which it has been suggested can be dated on numismatic evidence to between the 3rd - 8th centuries (Whitcomb, 1985: fig. 43, fig. 50, m).

Origin: Southern Iran.

80. SLIP.TB (Thick Brown Slipped Ware)

Fabric No: 45 **Illustration:** Plate 83 **Number of Sherds:** 78

Kennet Class: None.

Basis of Grouping: Quality of slip, decoration and vessel forms.

Defining Characteristics: Thick, slightly glossy opaque reddish-brown (2.5YR 3/1) or black/dusky red (2.5YR 4/4) slip on a light or occasionally darker orange body. The slip is often degraded and occurs on the interior and exterior, or on the interior and exterior of the rim only. Closed forms and everted rimmed bowls tend to have deeply incised decoration. In addition, there is a large group of distinctive medium-sized bowls with folded rims and slip mostly restricted to the interior of the vessels. Other aspects of slip cover and decoration are form specific.

Coherence: Coherent and readily distinguishable from the rest of the red and black slipped wares.

Decoration: Medium sized bowls are plain. Smaller bowls and jars can have quite large areas filled with deeply incised bands, wavy lines and grids.

Further Information: Good parallels for this class come from Qasr-i Abu Nasr, where much of the material was actually collected.

Form(s)	Description	Rim	Body	Base	H	W	D	T
TBS: 01	Open bowls with folded rims	Everted, folded & flattened	Open, quite steep sides	Flat, chamfer-ed edge	c.16 - 27cm	30 - 52cm	30 - 52cm	0.9 - 1.3cm
TBS: 02	Club rimmed bowls	Thickened 'T' from	Open, steep sided	Not clear	c.9 - 17cm	22 - 38cm	22 - 38cm	0.8 - 1.1cm
TBS: 03	Shallow bowls	Fattened with a faceted face	Shallow open	Not known	c.6.5 - 9cm	30 - 36cm	30 - 36cm	0.9 - 1cm
TBS: 04	Beaked rimmed bowls	Fattened, everted & rolled	Steep sided, slightly closed	Not known	c.13 - 20cm	31 - 48cm	31 - 48cm	0.9 - 1.2cm
TBS: 05	Mixed closed forms	Various	Mostly shouldered	Not known	c.17 - 23cm	c.16 - 24cm	10 - 15cm	0.4 - 1.1cm

Notes on Specific Forms:

TBS: 01 – Sipped interior and down to the bottom of the rim on the exterior.
TBS: 02 – Slipped interior and exterior except decorated pieces, which have slip stepping just over the rim and incising extending about half way down the exterior.
TBS: 03 – Slipped interior and exterior.
TBS: 04 – Slipped interior and exterior.
TBS: 05 – Mostly slipped interior and exterior, some slipped exterior only.

Parallels and Dating: The class occurs in the fortress area of Qasr-i Abu Nasr, which is has been suggested can be dated by numismatic evidence to between the 3rd - 8th centuries (Whitcomb, 1985: fig. 50, g,i-k,n,p, fig. 52, j,l,o-q).

Origin: Southern Iran?

81. SLIP.R (Fine Red Slipped Ware)

Fabric No: 46 **Illustration:** Plate 82 **Number of Sherds:** 236

Kennet Class: None.

Basis of Grouping: Surface treatment and fabric.

Defining Characteristics: Fine, well levigated, fully oxidised orange fabric with small quantities of very fine sand or chaff temper. Surfaces are covered with an orange, thick bright reddish-purple or thin brown coloured slip, which is often badly degraded. Bowls are generally slipped on the interior and exterior, jars on the exterior only.

Coherence: All slipped with fine orange bodies but rather varied in finer detail. Some well defined types within the class.

Decoration: None.

Further Information: This is a very long-lived tradition and the forms appear to be the most useful attribute for finer dating. At the same time, there are particular forms that endure without significant change. The dating of forms is based on an inspection of the Collection by Prof. Peter Magee.

Form(s)	Description	Rim	Body	Base	H	W	D	T
RS: 01	Small everted rimmed bowls	Sharply or gently everted	Open, fairly shallow	Flat	c.5 - 7.5cm	14 - 20cm	14 - 20cm	0.4 - 0.6cm
RS: 02	Small inverted rimmed bowls	Inverted, simple rounded lip	Open, shallow	Flat	c.8cm	23cm	23cm	0.5cm
RS: 03	Small closed bowls	Slightly clubbed or inverted	Slightly closed, upright sides	Flat	c.8 - 9cm	19 - 20cm	16 - 18cm	0.5 - 0.6cm
RS: 04	Small simple rimmed bowls	Simple, gently everted or vertical	Open, shallow	Flat	c.6 - 7cm	16 - 26cm	16 - 26cm	0.35 - 0.7cm
RS: 05	Medium sized carinated bowls	Not clear	Closed, concave & unslipped below carination	Flat	c.10 - 13cm	20 - 23cm	Not known	0.6 - 0.8cm
RS: 06	Collar rimmed jars	Inverted with a simple rounded lip	Shouldered and rounded	Flat	c.10 - 12cm	c.15 - 19cm	12 - 16cm	0.4cm
RS: 07	Small to medium sized everted rimmed jars	Everted	Mostly shouldered	Flat	c.13 - 19cm	c.15 - 20cm	12 - 16cm	0.5 - 0.65cm
RS: 08	Large inverted rimmed bowls	Inverted	Open	Flat	c.13 - 20cm	30 - 44cm	28 - 40cm	0.5 - 1.3cm
RS: 09	Small straight sided closed bowls	Inverted and slightly fattened	Rounded and closed	Flat	c.9 - 12cm	20 - 27cm	19 - 24cm	0.5 - 0.8cm
RS: 10	Mixed small bowl forms	Various	Open	Flat	c.10 - 15cm	20 - 34cm	20 - 34cm	0.4 - 1.3cm
RS: 11	Mixed small & medium sized jars	Various including everted & shallow collar	Closed, rounded or shouldered	Flat	c.13 - 17cm	c.14 - 25cm	12 - 19cm	0.3 - 0.9cm

Parallels and Dating: The class as a whole represents a very long lived tradition and it is only through the identification of forms that it is possible to date the material more closely. Forms RS: 01-07 find close parallels with the slipped wares from Tepe Yahya in the levels that have been C14 dated to the Achaemenid period, 3rd - 2nd century BC (spot dated, Magee 15/07/2002). The slipped wares at Tepe Yahya have a slightly coarser fabric with calcareous inclusions and appear, from analysis that has been done on the slips, to be locally manufactured. Forms RS: 08-11 form a second group that can be dated to the Parthian and Sasanian periods, 1st century BC - 6th century AD (spot dated, Magee 15/07/2002).

Origin: Southern Iran.

82. ALK.1-3 (Alkaline Glazed Ware, Groups 1 - 3)

Fabric No: 47

Kennet Class: ALK in the Williamson Collection was sub-divided in a different fashion to the Kush/al-Mataf assemblage, and as a result, it is difficult to correlate the two systems. Kennet sub-divided the class into five variants based on fabric composition and glaze colour (TURQ.1-5) and illustrated a small number of forms that appeared to show frequency changes within the parameters of the stratified sequence. The Williamson assemblage on the other hands was sub-divided initially into form groups, and then split into a further three sub-classes. ALK.1 is generic category whereas ALK.2 and 3 have been defined on the basis of glaze, fabric and form. ALK.2 may be the same as TURQ.1 and certainly includes Kennet's Type 64. ALK.3 includes pieces from TURQ.5 although the latter class appears to be more broadly defined.

Basis of Grouping: Glaze, fabric and forms.

Defining Characteristics: Monochrome turquoise or blue-green coloured glaze usually covering both the exterior and interior, though on closed forms the glaze often appears thin and discoloured on the interior. The fabric is light orange or buff-yellow with a fine gritty feel and often contains small, rolled quartz grains. The fabric can be quite brittle though often it is hard. Vessels include a wide range of jar and bowl forms.

ALK.1 – (500 Sherds) Generic category of Alkaline-Glazed Wares. The group displays the full range of glaze colour and fabric variation described above (see Plate 90).

ALK.2 – (36 Sherds) Characterised by a distinctive type (ALK: 28 & ALK: 29), which is a basin, often with a single or several raised bands, low lug-handles and a distinctive bifurcating rim. These vessels have a light yellowish-green coloured glaze, which is often badly degraded and the body has a tendency to be soft, powdery, and more yellow than that found on other forms of ALK. Other forms are included in the sub-class with more standard glaze and body, though there is a tendency towards turquoise-green glaze rather than turquoise-blue (see Plate 91).

ALK.3 – (118 Sherds) This sub-class has a dark turquoise-blue or standard turquoise glaze, which appears to be more stable than other alkaline-glazes and thus tends to be better preserved. The fabric of ALK.3 is creamy-yellow, slightly rough, hard and brittle, though there is often nothing to distinguish it from other ALK bodies. Specific vessel forms are represented in this sub-class including a characteristic globular jar with short rilled or incised neck, horizontal 'butterfly' handles attached at the top of the shoulder and appliqué decoration on the upper half of the vessel. Other diagnostic forms also appear to be associated with this sub-class (see Plate 92).

Coherence: Fabric seems rather varied and the range of types is very wide. Type groups appear to be the most reliable way of sub-dividing the class.

Decoration: For the decoration of individual forms see 'notes on specific forms below'. Sub-classes ALK.1-2 are generally plain or with simple incised or raised bands. Within the ALK.3 sub-class the globular jar either has a plain body with several 'butterfly' handles on the shoulder and rilled or 'sharks tooth' incised neck (ALK: 31), or similarly decorated neck and handles but with appliqué decoration consisting of buttons and straight or wavy strips arranged in loose configurations covering the upper part of the body (ALK: 32). Bowls within the ALK.3 sub-class are generally plain but have pronounced throwing rings on the body (ALK: 18).

Form(s)	Description	Rim	Body	Base	H	W	D	T
ALK: 01	Small simple rimmed open bowls	Simple, slightly flared	Open, flared	Flat or foot ring	c.4 - 7cm	11 - 16cm	11 - 16cm	0.3 - 0.7cm
ALK: 02	Medium sized open bowls	Simple slightly fattened	Open, flared	Flat or foot ring	c.5 - 12cm	26 - 36cm	26 - 36cm	0.8 - 1.1cm
ALK: 03	Small bevel rimmed bowls	Simple, bevelled inside	Open, flaring	Flat or foot ring	3.5 - 7.5cm	10 - 20cm	10 - 20cm	0.4 - 0.6cm
ALK: 04	Vertical rimmed bowls	Simple rilled exterior, sometimes notched inside	Steep sided with exterior rilling	Flat or foot ring	c.6 - 9cm	14 - 20cm	14 - 20cm	0.5 - 0.7cm
ALK: 05	Small semi-closed bowls	Gently inverted simple & fattened	Rounded & half-closed	Flat?	2.5 - 5cm	8 - 18cm	7 - 16cm	0.3 - 0.6cm
ALK: 06	Small vertical sided bowls with fattened 'S' profile rim	Fattened 'S' profile	Slightly closed, rounded	Flat?	c.8 - 10cm	14 - 20cm	14 - 20cm	0.6 - 0.8cm
ALK: 07	Everted rimmed bowls/dishes	Sharply everted flange	Open & shallow	Flat?	c.5 - 7cm	16 - 28cm	16 - 28cm	0.5 - 0.8cm
ALK: 08	Everted 'beaked' rimmed bowls/dishes	Sharply everted 'beaked' flange	Open & shallow	Flat?	c.5 - 6cm	16 - 24cm	16 - 24cm	0.6 - 0.7cm
ALK: 09	Dumpy thick based bowls	Simple everted	Shallow 'S' profile	Flat, slightly concave	4cm	8cm	8cm	0.5 - 0.8cm
ALK: 10	Simple open bowls with notched rim	Simple with notch along inside of rim	Open, flaring, pronounced throwing rings	Flat, slightly concave	5.5 - 6.5cm	16 - 18cm	16 - 18cm	0.5 - 0.6cm
ALK: 11	Small and medium sized lid bowls	Simple with a projecting flange	Open & shallow	Flat?	c.5 - 8cm	15 - 30cm	12 - 27cm	0.6 - 1.4cm
ALK: 12	Small lightly carinated bowls	Generally simple, can be slightly fattened	Open, carinated above centre	Flat?	c.8 - 11cm	15 - 26cm	15 - 26cm	0.4 - 1cm
ALK: 13	Medium sized carinated bowls	Fattened and slightly everted	Open with heavy carination above centre	Flat?	c.10 - 13cm	29 - 40cm	29 - 40cm	0.7 - 1cm
ALK: 14	Small squared rimmed bowls	Slightly fattened, squared top	Open & flaring	Flat?	c.8 - 13cm	23 - 30cm	23 - 30cm	0.7 - 1.2cm

ALK: 16	Medium bowls with folded rims	Fattened and folded	Open, straight sides, deep	Flat?	c.15 - 20cm	26 - 37cm	26 - 37cm	0.9 - 1.4cm
ALK: 17	Small & medium bowls with flange rims	Everted flange with thinning lip	Open, fairly deep	Flat?	c.9 - 20cm	22 - 42cm	22 - 42cm	0.6 - 0.9cm
ALK: 18	Medium bowls with rolled everted rim	Fattened, everted & half-rolled	Open, fairly deep	Flat?	c.13 - 19cm	32 - 45cm	32 - 45cm	0.7 - 1.1cm
ALK: 19	Medium bowls with 'mushroom' rims	Domed hammerhead rim	Quite deep, semi-closed	Flat?	c.13 - 16cm	30 - 36cm	30 - 36cm	0.5 - 1.1cm
ALK: 20	Medium bowls with everted 'ridged' rims	Hammerhead rim with central ridge	Open, deep & shallow versions	Flat?	c.12 - 17cm	29 - 45cm	29 - 45cm	0.7 - 1.2cm
ALK: 21	Small – Medium long necked hammer rimmed jars	Domed hammerhead form, heavier on outside	Long neck, shouldered & rounded body	Flat?	c.15 - 26cm	c.13 - 23cm	8 - 14cm	0.5 - 0.7cm
ALK: 22	Small – Medium non-shouldered jars	Everted, folded & squared	Body expands straight from rim	Flat?	c.20 - 31cm	c.18 - 32cm	14 - 29cm	0.8 - 1.2cm
ALK: 23	Small sharp shouldered jars	Everted rounded or squared	Shouldered a short distance below rim	Flat?	c.12 - 15cm	15 - 20cm	11 - 15cm	0.6 - 0.9cm
ALK: 24	Small complex everted rimmed jars	Everted & stepped or notched along outer edge	Shouldered	Flat?	c.16 - 18cm	c.14 - 22cm	10 - 18cm	0.5 - 0.8cm
ALK: 25	Medium sized vertical collar rimmed jars	Everted with vertical collar section	Shouldered	Flat?	c.17 - 22cm	c.16 - 22cm	10 - 18cm	0.4 - 1cm
ALK: 26	Small – medium short everted collar rimmed jars	Narrow mouth with a short rounded collar below	Shouldered	Flat?	c.16 - 23cm	c.14 - 21cm	8 - 14cm	0.6 - 0.9cm
ALK: 27	Large wedge rimmed bowls	Oblique inverted wedge form hammerhead	Open, steep sided	Flat?	c.15cm	33cm	33cm	1cm
ALK: 28	Medium bottle necks jars	Flared, often slightly rolled	Shouldered	Flat?	c.22cm	c.10cm	5cm	0.6cm
ALK: 29	Medium - large bifurcating rimmed basins	Fattened with bifurcation down the middle	Half closed, unshouldered	Flat	c.16 - 23cm	29 - 37cm	26 - 34cm	0.7 - 1.4cm
ALK: 30	Medium - large bifurcating rimmed basins	Bifurcation towards inside edge with exterior bulb	Half closed, unshouldered	Flat	c.16 - 27cm	c.29 - 40cm	27 - 37cm	0.6 - 1.1cm
ALK: 31	Medium closed necked jars	Fattened, folded, faceted exterior edge	Closed neck, shouldered	Flat?	c.17 - 25cm	c.19 - 29cm	15 - 22cm	0.9 - 1.1cm

ALK: 32	Large globular closed necked jars	Fattened, folded, faceted exterior edge	Short closed neck, globular body, often handled	Flat?	c.30 - 50cm	c.40 - 60cm	19 - 24cm	0.7 - 0.9cm
ALK: 33	Various deeply incised & appliqué related pieces	Various	Various	Various	N/A	N/A	N/A	N/A

Notes on Specific Forms:

ALK: 01 – Simple standardised form. No decoration.
ALK: 02 – Rather varied and badly defined form. Sometimes has heavy ribbing inside. Can be decorated with cordons, wavy bands and grooves across the rim.
ALK: 03 – Well-defined consistent form, probably the same as Kennet's Type 25 (Kennet, 2004: fig. 5). No decoration.
ALK: 04 – Fairly distinctive form decorated with rilling on the exterior or rilling with oblique slashes.
ALK: 05 – Rather varied form, similar to ALK: 04 but the rims are inverted and the bowls half closed. Can be plain or with rilling on the rim exterior.
ALK: 06 – Consistent form similar to ALK: 04 except that the rims have a distinctive 'S' profile. Vessels can be plain or have rilling below the rim. One vessel has heavy rustication of the shoulder.
ALK: 07 – Rather varied form with no decoration.
ALK: 08 – Consistent form similar to ALK: 07 except that the flanged rim is beaked. No decoration.
ALK: 09 – Only one example of this form in the Collection, but complete profile is preserved and the type is distinctive. No decoration.
ALK: 10 – Consistent form, the same as Kennet's Type 94 (Kennet, 2004: fig. 5). No decoration.
ALK: 11 – Consistent, very distinctive and potentially useful form. No decoration.
ALK: 12 – Consistent form, the same as Kennet's Type 72 (Kennet, 2004: fig. 5). Tends to have a greenish-blue rather than turquoise coloured glaze. No decoration.
ALK: 13 – Consistent form. Glaze is turquoise and the fabric appears to be particularly consistent. No decoration.
ALK: 14 – Slightly varied form. Glaze is normal. No decoration.
ALK: 15 – Well defined form though the size range is wide. The form is similar to UGP.G2 and sometimes it can be difficult to distinguish between the two, the main difference appears to be in glaze composition. Glaze colour is strong turquoise. No decoration.
ALK: 16 – Fairly consistent form with a dark greenish-blue-turquoise glaze. No decoration.
ALK: 17 – Fairly consistent form. Same glaze colour and similar vessel form to ALK: 16. One example has incised straight and wavy bands below the rim.
ALK: 18 – Consistent form. Mostly undecorated but with heavy throwing rings. One has an incised wavy band below the rim. The form is similar to ALK: 16 and ALK: 17 with the addition of the rim being rolled. The glaze colour is also similar with the addition of a lighter turquoise example.
ALK: 19 – Distinctive form. Smaller ones are undecorated. Larger bowls can have deeply incised wavy bands and one has wide low lug handles. Glaze colour is dark greenish-blue.
ALK: 20 – Form and glaze colour are rather varied. Can be decorated with wavy bands inside and out, but mostly plain.
ALK: 21 – Well defined and fairly distinctive form. Fabric in general is consistent but glaze is more varied. Can have incised wavy bands below or rim, but mostly plain.
ALK: 22 – General form is consistent but rim shape is varied. Most vessels are plain though some have grooves and one has incised wavy bands and a carved cordon.

ALK: 23 – Consistent form. No decoration but often with horizontal grooves around the neck and shoulders. Often has small lug type handles.

ALK: 24 – Possibly two separate forms but the sample for each is not large enough to differentiate them reliably. Probably undecorated.

ALK: 25 – Distinctive form, potentially useful. No decoration.

ALK: 26 – Some variation but the form is distinctive, useful and well defined and the fabric is very consistent. Vessels are plain with a bottle green glaze.

ALK: 27 – Form seems consistent. Undecorated with a dark blue-green glaze.

ALK: 28 – Distinctive form with a bright turquoise-green glaze.

ALK: 29 – Well defined distinctive form. The fabric also tends to be very consistent and distinct from other alkaline glazed wares. The glaze is mostly degraded but where preserved is always a light olive green like Kennet's earlier alkaline glazes (Kennet, 2004: 'TURQ.1 & 2', 29). Decoration is restricted to raised, wide, flat bands, recesses and, in one case, a wavy band. The form is the same as Kennet's Type 64 (Kennet, 2004: fig. 5).

ALK: 30 – Consistent, well-defined form, very similar to ALK: 29 in terms of fabric, glaze colour, decoration and vessel size and form. Also comparable with Kennet's Type 64 (Kennet, 2004: fig. 5).

ALK: 31 – Consistent type with varied fabric. Glaze colour is always dark greenish-blue and generally quite well preserved. The majority of vessels are decorated with close rilling down the neck or sharp wavy bands combined with the rilling. Only a few plain examples. Similar to ALK: 32.

ALK: 32 – Fabric, glaze colour and form are consistent. Covered with a dark greenish-blue glaze and decorated with deep oblique slashes and grooves around the neck and various appliqué motifs on the body including arcing bands, buttons, wavy bands and other elements. Form and glaze colour are similar to ALK: 31.

ALK: 33 – Assorted forms with the same fabric and glaze colour and quality as ALK: 31 and ALK: 32. Most have the same form as ALK: 32 but with no appliqué decoration, bowl forms are included as well. Decoration includes heavy modelled bands, incised rilling, sharp wavy incised lines and deep cut away designs.

Parallels and Dating:

ALK.1 - Alkaline-glazed ware is first documented in the Persian Gulf region from the 3rd century BC. Evidence from al-Mataf suggests that small quantities may have continued in circulation as late as the 15th century (Kennet, 2004: 29-30), although in the opinion of the present author it should be possible to distinguish the later ALK, particularly as the major manufacturing centres in southern Mesopotamia are likely to have largely gone out of production during the 10th century with the downturn in the economy of that region. A more conventional date for the end of typical Sasanian/Islamic ALK is provided by the date of AD 1000 at Shanga (Horton, 1996: 277), and more recently from its scarcity in the well-dated early levels belonging to the end of the 10th century at Sharma in the Hadramawt region on the south coast of Yemen (Rougeulle, 2005: 226-27).

ALK.2 - Dated to between the 5th - 8th centuries. The class is characterised by a distinctive type with bifurcating rim dated by Williamson on the basis of its absence both from 3rd - 5th century levels at Coche and from the 8th - 9th century foundation levels at Siraf (Williamson, 1971-72b: 10-11). The same type (Type 64) is found at Kush in Periods I and II dated to the 5th - 7th/8th centuries (Kennet, 2004: table 16).

ALK.3 - The class occurs in abundance throughout the sequence at Siraf, particularly in the earlier levels suggesting an appearance within the 8th century (Whitehouse, 1968: 14). By the end of the 10th century the class appears to have gone out of circulation based on the evidence from Shanga (Horton, 1996: 277) and more recently Sharma (Rougeulle, 2005: 226-27).

Origin: Southern Mesopotamia?

83. ALK.RC (Alkaline Glazed Ware, Related Class)

Fabric No: 48 **Illustration:** Plate 93 **Number of Sherds:** 28

Kennet Class: The class is probably part of the continuation of the non-GRAF and non-ALK related green-glazed tradition represented in the al-Mataf sequence by certain types of TURQ and GMONO.2.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Large globular jars displaying forms similar to ALK: 32 including the presence of lug handles and appliqué decoration, however the fabric is coarse and red and the glaze is a lustrous green or brown. Glaze is fairly thick but tends to exfoliate. Where it is preserved it generally covers the interior and exterior, though on some pieces it covers the exterior only. Some pieces have glaze similar to the alkaline-glazed bottle-green tone, but in this case, the glaze appears to have a lead flux.

Coherence: Mostly coherent.

Decoration: Appliqué buttons, raised heavily sculpted bands, some incised wavy bands.

Form(s)	Description	Rim	Body	Base	H	W	D	T
ARC: 01	Large globular jars	Fattened, everted and flattened top	Short neck, wide globular body	Flat?	c.26 - 33cm	c.32 - 39cm	16 - 23cm	0.9 - 1.4cm

Parallels and Dating: Although there are no precise parallels for this group, the fact that the form and decoration closely mimics ALK.3, yet the hard orange body and glossy green lead-glaze are clearly unrelated, suggests that the class is probably slightly later dated and may be part of the continuation of non-GRAF related Green-Glazed Ware tradition. This should be dated later than the decline of ALK.3 in the 10th century (see above), after which it continues through the al-Mataf in the guise of certain types TURQ up to Phase III of the Mosque, dated to the 15th century, and GMONO.2, which occurs from Phase III of the Mosque through the rest of the sequence (Kennet, 2004: 30, 44).

Origin: The hard orange body suggests that the class is unrelated to the ALK production centres of southern Mesopotamia and was therefore probably a local product of southern Iran.

84. TIN.W1 (Opaque White Glazed Ware, Group One)

Fabric No: 55 **Illustration:** Plate 115 **Number of Sherds:** 85

Kennet Class: YBTIN.

Basis of Grouping: Glaze and fabric.

Defining Characteristics: Fine, light-yellow body with a thick, opaque, plain white glaze covering the interior and exterior. Most pieces belong to a single form, which is the same as Kennet's Type 46 (Kennet, 2004: fig. 7); an open bowl with a flaring rim and raised vertical ridged inside. The inside of the bowl usually has a distinctive sharp step down to the interior floor and the underside has a finely-turned squared foot-ring.

Coherence: Coherent class.

Decoration: None except for the ridges in bowls and form TW1: 02, which has a finely modelled, flattened appliqué ring attached to the side.

Further Information: All aspects of the class including the distinctive interior ridges and the glaze colour closely mimic contemporary East Asian pottery, in particular WWSL.

Form(s)	Description	Rim	Body	Base	H	W	D	T
TW1: 01	Open bowls	Gently everted and simple	Open, often with raised ridges inside	Squared foot ring	c.5 - 10cm	14 - 26cm	14 - 26cm	0.3 - 0.7cm
TW1: 02	Steep sided bowls	Strongly everted, squared & hooked flange	Upright but open with appliqué decoration	Flat, vertical before foot	7cm	23cm	23cm	0.4 - 0.8cm
TW1: 03	Everted rimmed bowls	Everted flange with up-tuned lip	Open, mid-depth	Not known	c.9cm	28cm	28cm	0.6 - 0.8cm

Parallels and Dating: Evidence from Siraf indicates that TIN.W1 was introduced as one of the first elements in the Samarra horizon during Period 4 of the Site A sequence (Whitehouse, 1979: 52, fig. 3). A recent study of surface pottery at Samarra indicates however that TIN.W1 was not introduced until the foundation of the main city in AD 836 at the earliest (Northedge & Kennet, 1994: 33).

Origin: Southern Mesopotamia.

85. TIN.W2 (Opaque White Glazed Ware, Group Two)

Fabric No: 56 **Illustration:** Plate 116 **Number of Sherds:** 22

Kennet Class: None.

Basis of Grouping: Glaze and fabric.

Defining Characteristics: Similar to TIN.W1 except that the body is slightly harder, more densely fired and light orange coloured with coarse inclusions. The glaze is plain opaque white, and is thicker and generally better fitted than the glaze on TIN.W1. Forms are also different.

Coherence: Coherent class.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
TW2: 01	Shallow dishes	Everted, long horizontal flange	Open, shallow step down to inner floor	Flat	2.5 - 3.5cm	30 - 32cm	30 - 32cm	0.7 - 1cm
TW2: 02	Simple open bowls	Simple, thinning	Open, fairly deep	Squared foot-ring or flat & slightly concave	5.5 - 8.5cm	16 - 25cm	16 - 25cm	0.3 - 0.6cm

Parallels and Dating: Test excavation in the potter's quarter at Sirjan produced a mass of 10th - 11th century pottery manufactured at the site including examples of the this distinctive coarse bodied Opaque Glazed Ware (Williamson, 1971a: 177; Williamson, 1972a: 27).

Origin: Sirjan?

86. TIN.TBS (Turquoise and Black Splashed Opaque Glazed Ware)

Fabric No: 55 **Illustration:** Plate 117 **Number of Sherds:** 60

Kennet Class: Kennet distinguished between a turquoise-blue splashed class COBALT, and a black splashed class BTIN. In the Williamson assemblage, two variants were noted. One with turquoise splashes only, and another with turquoise and clack splashes combined. Because all of the pieces are small fragmentary sherds and there is no way of ascertaining whether black did or did not exist on other parts of the vessel, the two groups have been amalgamated here into one class.

Basis of Grouping: Fabric and decorative scheme.

Defining Characteristics: Thick, opaque white glazed interior and exterior, including the foot, decorated with diffuse, fairly haphazard splashes of bright turquoise and black. Both colours can be combined or turquoise can appear on its own. The body of this class is pale cream with sandy inclusions. Forms are the same as TIN.W1 except for the inclusion of a lamp.

Coherence: Coherent class.

Decoration: Zones of splashing. Turquoise tends to run and is only used on the inside. Black can be used for splashing or as a complete cover extending onto the outside.

Further Information: Kennet's COBALT and BTIN classes have been amalgamated here as the material appears to be very closely related. Some sherds with just black or just turquoise could have included the other colour on the complete vessel anyway. Also from Kennet's data there appears to be no chronological difference between the two sub-categories. It should also be noted that Kennet's class code COBALT is misleading as the pieces are in fact splashed with a turquoise colorant rather than cobalt.

Form(s)	Description	Rim	Body	Base	H	W	D	T
TTB: 01	Open bowls	Gently everted & simple	Open, often with raised ridges inside	Squared foot ring	c.5 - 10cm	14 - 26cm	14 - 26cm	0.3 - 0.7cm
TTB: 02	Small rolled rimmed jar	Everted rolled & fattened	Unshouldered half closed	Not known	c.13cm	14cm	12cm	0.4cm
TTB: 03	Handled lamp	Simple	Handle raised above rim	Not known	c.5cm	10cm	10cm	0.5cm

Parallels and Dating: Although Whitehouse's terminology is not entirely clear, it appears that TIN.TBS probably appears as part of the second stage in the Samarra horizon in Period 5 of the Site A sequence (Whitehouse, 1979: 52, fig. 3). Similarly at Kush, TIN.TBS appears a Phase later than TIN.W1 in Phase E-06 dated to the 9th - 11th centuries (Kennet, 2004: 32-3, table 3). This picture is supported by a study of surface finds at Samarra which produced abundant finds of the class from areas occupied from AD 836 to AD 885 - 895 (Northedge & Kennet, 1994: 29).

Origin: Southern Mesopotamia.

87. TIN.CT (Cobalt Trailed Opaque Glazed Ware)

Fabric No: 55 **Illustration:** Plate 119 **Number of Sherds:** 22

Kennet Class: None.

Basis of Grouping: Fabric and decorative scheme.

Defining Characteristics: Fine yellow body with no visible inclusions. Interior and exterior surfaces covered with a thick, opaque, off-white glaze decorated with lively trails of crisp dark cobalt lines, reminiscent of Chinese or Arabic calligraphy. Forms include simple, open bowls or tall, straight-sided, flaring, flat-bottomed beakers.

Coherence: Most of the sherds from this class belong to the same vessel. Other examples are also reasonably consistent.

Decoration: As described above. On beakers the decoration runs vertically down the exterior and includes large blank zones. On some of the bowls the decoration includes more complex figurative elements such as.

Further Information: There are a range of prescribed styles of coloured Opaque Glazed Ware that can be recognised in the art historical literature and within archaeological assemblages of the 9th - 10th centuries. Two of the most widespread varieties appear to be a version with well-defined trails of cobalt (TIN.CT) and another with diffuse splashes of turquoise or blue sometimes combined with black. Recent discussion of the Samarra horizon has been confused slightly by the fact that TIN.CT does not occur at Kush and therefore not being aware of this group, Kennet dubbed what has been referred to here as TIN.TBS, COBALT and linked it to the earliest phase of the Samarra horizon (Kennet, 2004: 32-33) based on various evidence including that from Siraf (Whitehouse, 1979: 51-6 & 59). In fact Whitehouse distinguishes between a 'blue' and a 'green' version of the Opaque Glazed Ware class, suggesting that the 'blue' version, which should be the same as TIN.CT, was introduced in Period 4 of the Site A sequence and that the 'green' version, which should be the same as TIN.TBS and COBALT, was introduced as part of a second phase of the Samarra horizon in Period 5 (Whitehouse, 1979: 52, fig. 3).

Form(s)	Description	Rim	Body	Base	H	W	D	T
TCT: 01	Open bowls	Gently everted and simple	Open, often with raised ridges inside	Squared foot ring	c.5 - 10cm	14 - 26cm	14 - 26cm	0.3 - 0.7cm
TCT: 02	Tall straight sides flaring beakers	Simple straight, very slightly fattened	Upright, straight sided and flaring	Flat	16.5cm	18cm	18cm	0.5cm

Parallels and Dating: Evidence from Siraf suggests that TIN.CT was introduced together with TIN.W1 in Period 4 of the Site A sequence as one of the first innovations of the Samarra horizon, which appears later in the sequence than the coin horde in Period 1 of the Great Mosque, which in the most Whitehouse's most recent statement, has had its dating revised from AD 803-04 to AD c.825 - 850 (Whitehouse, 1979: 52, 56, fig. 3). The controversy over the dating of this crucial deposit has not yet however been clearly resolved. A study of surface finds from Samarra has indicated that TIN.CT does not occur anywhere on the main city site itself, but only at the site of Qatul dated to AD 834-35 (Northedge & Kennet, 1994: 25). From this evidence it appears that the class must have had a very short currency, as Samarra was founded only a year later in AD 836 and the class is almost certainly an imitation of the rare Chinese blue and white ware from the Gongxian kilns in Hunan; the only complete examples of which have been recovered from the Belitung shipwreck, which may have been destined for the Persian Gulf in AD c.826 (Guy, 2001-02: 20, 25, figs. 10 & 11).

Origin: Southern Mesopotamia.

88. TIN.T (Monochrome Opaque Turquoise Glazed Ware)

Fabric No: 55, 56 **Illustration:** Plate 118 **Number of Sherds:** 13

Kennet Class: None.

Basis of Grouping: Glaze type and colour.

Defining Characteristics: Thick, soft, opaque monochrome turquoise glaze. Vessels are all open bowls with flat bases or squared foot-rings, often with a step in the interior floor. The glaze usually covers the interior and exterior including the base. Most of the sherds have a fine orange fabric (Fabric 56), one example is on the fine cream fabric (Fabric 55) and three sherds are on a fine sandy orange fabric that has not been separately described.

Coherence: Form and surface treatment are consistent, but various fabrics are represented.

Decoration: None except one piece that has a black ring following the edge of the interior floor.

Form(s)	Description	Rim	Body	Base	H	W	D	T
TMT: 01	Open bowls	Gently everted and simple	Open, often with raised ridges inside	Squared foot ring	c.5 - 10cm	14 - 26cm	14 - 26cm	0.3 - 0.7cm

Parallels and Dating: In the discussion of the dating of Opaque Glazed Wares from Siraf and Kush (Whitehouse, 1979; Kennet, 2004: 31-34, Tables 3, 18, 19) there has been no indication of the dating of coloured monochromes, they are however unlikely to belong to the earliest phase of the Samarra horizon and were probably introduced as part of the diversification of Opaque Glazed Wares from the mid 9^{th} - 10^{th} century.

Origin: Southern Mesopotamia and Southern Iran?

89. TIN.B (Monochrome Opaque Blue Glazed Ware)

Fabric No: 55 **Illustration:** Plate 122 **Number of Sherds:** 2

Kennet Class: None.

Basis of Grouping: Fabric, glaze type and colour.

Defining Characteristics: Fine cream coloured body with a lustrous light monochrome blue glazed interior and exterior. The form is the same as TPL: 01. It is not clear whether the class would originally have had lustre decoration, but it appears to be closely related in other respects to the lustre decorated sub-classes TIN.ML and TIN.PL.

Coherence: Only one sherd represented.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
TMB: 01	Everted rimmed bowl	Simple, gently everted	Open, mid-depth	Squared foot-ring	c.7 - 7.5cm	19 - 21cm	19 - 21cm	0.4 - 0.6cm

Parallels and Dating: In the discussion of the dating of Opaque Glazed Wares from Siraf and Kush (Whitehouse, 1979; Kennet, 2004: 31-34, Tables 3, 18, 19) there has been no indication of the dating of coloured monochromes, they are however unlikely to belong to the earliest phase of the Samarra horizon and were probably introduced as part of the diversification of Opaque Glazed Wares from the mid 9th - 10th century.

Origin: Southern Mesopotamia.

90. TIN.ML (Opaque Glazed Monochrome Lustre)

Fabric No: 55 **Illustration:** Plate 121 **Number of Sherds:** 8

Kennet Class: LUSTRE.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Fine, yellow-bodied mostly with no visible inclusions though some have occasional grits. All of the vessels are open bowls with an even, opaque, glossy white glaze over-painted with gold lustre decoration.

Coherence: Some variation in fabric and one sherd has lustre painted directly onto an unglazed body but generally the group is coherent.

Decoration: Wide range of finely painted complex designs.

Form(s)	Description	Rim	Body	Base	H	W	D	T
TML: 01	Everted rimmed bowls	Simple, gently everted	Open, mid depth	Delicate foot-ring	c.7 - 8cm	19 - 22cm	19 - 22cm	0.3 - 0.4cm
TML: 02	'Bobble' rimmed bowls	Lightly fattened and rounded on the exterior	Open, steep sides, mid depth	Not known	c.4cm	10cm	10cm	0.3cm
TML: 03	Vertical rimmed bowls	Simple, vertical	Open, shallow profile	Not known	c.6cm	26cm	26cm	0.35cm

Parallels and Dating: Evidence from the Site P1 and M2 sequences at Siraf indicated that TIN.ML was introduced as one of the latest elements of the Samarra horizon together with GRAF.EP (Whitehouse, 1979: 54, fig. 4). A study of surface finds from Samarra suggests that these events took place at the very end of the 9th or more likely the beginning of the 10th century, as there have been no finds of TIN.ML from the main city at Samarra which was occupied up until at least AD 885 - 895 (Northedge & Kennet, 1994: 29, 33).

Origin: Southern Mesopotamia.

91. TIN.PL (Opaque Glazed Polychrome Lustre)

Fabric No: 55 **Illustration:** Plate 120 **Number of Sherds:** 10

Kennet Class: None.

Basis of Grouping: Fabric and surface treatment.

Defining Characteristics: Fine, light yellow coloured fabric with no visible inclusions. Interior and exterior surfaces are covered with an even, opaque, glossy, white glaze over-fired on

multiple occasions with different lustres. Lustre combinations include gold and copper-brown or gold, copper-brown and ruby-red.

Coherence: Coherent class.

Decoration: Both the interiors and exteriors are decorated, exteriors are always more simple. Exterior decoration is mostly comprised of vertically arranged leaf like brush strokes. Interiors are decorated with more intricate composite colour patterns.

Form(s)	Description	Rim	Body	Base	H	W	D	T
TPL: 01	Everted rimmed bowls	Simple gently everted	Open, mid depth	Squared foot-ring	c.7 - 7.5cm	19 - 21cm	19 - 21cm	0.4 - 0.6cm
TPL: 02	Short straight sided dishes	Simple, near vertical	Steep slightly flaring sides	Flat	2.5cm	26cm	26cm	0.5 - 0.6cm
TPL: 03	Flat 'fish dishes'	Simple, slightly raised	Open	Flat	0.5cm	28cm	28cm	0.4cm

Parallels and Dating: Unlike TIN.ML significant quantities of TIN.PL have been recovered from the main city site of Samarra indicating that the class was in circulation between AD 836 when the city was founded and AD 885 - 895 when it was abandoned (Northedge & Kennet, 1994: 33).

Origin: Southern Mesopotamia.

92. TIN.N-ID (Non-Identified Opaque Glazed Ware)

Fabric No: 55 **Illustration:** None **Number of Sherds:** 6

Kennet Class: None.

Basis of Grouping: Fabric and glaze type.

Defining Characteristics: Various opaque glazed wares with light cream bodies. Most of the forms are open bowls with lightly everted rims. Glaze colour or decoration do not belong to any of the other opaque glazed ware classes.

Coherence: Part of a unified tradition but disparate in terms of style.

Decoration: Some plain monochrome types, others decorated.

Parallels and Dating: The specific one-off styles found on TIN.N-ID have no specific parallels, however they are likely to belong to the later TIN sub-classes of the mid 9th – late 10th centuries.

Origin: Southern Mesopotamia.

93. SPW.YB (Yellow and Brown Slip Painted Ware)

Fabric No: 57 **Illustration:** Plate 112 **Number of Sherds:** 206

Kennet Class: None.

Basis of Grouping: Decorative technique and style.

Defining Characteristics: Fine, red-bodied ware with a white-slip ground over-painted with brown, washes of yellow and occasional highlights of green overglazed with a clear transparent lead glaze.

Coherence: Coherent style.

Decoration: Pseudo-calligraphic designs in dark paint framed by black zones and panels of hatching or dots. Colours are slightly diffuse but thin lines can be reasonably sharp.

Further Information: SPW.YB is by far the biggest element of the Slip-Painted Ware assemblage in the Williamson Collection.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SPYB: 01	Open gently everted rimmed bowls	Simple, gently everted	Open, mid depth	Flat, slightly concave/ squared foot-ring	c.6 - 11cm	16 - 32cm	16 - 32cm	0.3 - 0.7cm
SPYB: 02	Small upright rimmed bowls	Slightly fattened, near vertical	Open, shallow profile	Flat	c.3.5 - 6.5cm	10 - 18cm	10 - 18cm	0.3 - 0.6cm
SPYB: 03	Heavy everted rimmed dishes	Everted & fattened, squared down tuned lip	Open and shallow, stepped inside floor	Flat	2.5cm	31cm	31cm	0.7 - 0.9cm
SPYB: 04	Small sharply everted rimmed bowls	Sharply everted with a plain or complex lip	Open, mid depth	Flat	c.3 - 5cm	10 - 16cm	10 - 16cm	0.4 - 0.5cm
SPYB: 05	Non-diagnostic closed forms	Not known	Not known	Not known	Not known	Not known	Not known	Not known

Parallels and Dating: Test excavation in the potter's quarter at Sirjan produced a mass of 10th - 11th century pottery manufactured at the site including examples of the this distinctive southern Iranian Slip Painted Ware (Williamson, 1971a: 177; Williamson, 1972a: 27).

Origin: Southeast Iran.

94. SPW.BG (Slip-Painted Ware with a Brown Ground)

Fabric No: 57 **Illustration:** Plate 113 **Number of Sherds:** 84

Kennet Class: None.

Basis of Grouping: Decorative technique and style.

Defining Characteristics: Fine, hard, red-bodied ware with a solid, dark brown/black chestnut coloured slip ground, over-painted with white and covered with a transparent glossy lead-glaze which is often completely degraded leaving a matt surface with the decoration and slip preserved. The most common form is an open bowl with lightly everted rim. About one quarter of the assemblage is also made up of closed forms.

Coherence: Consistent grouping that contrasts with the other SPW sub-classes both in terms of ground slip colour and in style of decoration.

Decoration: Mostly white painted lines and dots contrasted against the dark slip ground. The patterns are loose and fluid. Rings of dots or arching solid strips are particularly common. Quite large blank zones are often left between more intricate elements of patterning.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SPBG: 01	Open gently everted rimmed bowls	Simple, gently everted	Open, mid depth	Flat, slightly concave/ squared foot-ring	c.6 - 9cm	16 - 26cm	16 - 26cm	0.3 - 0.7cm
SPBG: 02	Closed Jars	Closed mouth with fatted folded or everted lip	Rounded, non-shouldered	Flat	c.18 - 44cm	c.34 - 41cm	20 - 29cm	0.8 - 1.4cm

Parallels and Dating: Recovered from Sirjan where the class was manufactured in 10th - 11th century contexts within the potter's quarter (see SPW.YB above).

Origin: Southeast Iran.

95. SPW.BW (Brown on White Slip Painted Ware)

Fabric No: 57 **Illustration:** Plate 114 **Number of Sherds:** 52

Kennet Class: None.

Basis of Grouping: Decorative technique and style.

Defining Characteristics: Fine, hard, red-bodied bowls with a strong white slip ground over-painted with brown/black lines which would have been covered with a clear led-glaze. Most examples have completely lost their original glaze leaving the surfaces with a soft dry feel. The style of decoration is similar to SPW.YB.

Coherence: Reasonably consistent traits that stand apart from the other sub-classes within the Slip-Painted Ware group.

Decoration: Pseudo-calligraphic and other scrawling line motifs framed by solid bands which often follow the rim or run just below.

Further Information: Some of the material may originally have had splashes of yellow (some pieces have vague traces), which would put them within the SPW.YB sub-class. In fact, the whole group may be SPW.YB in a degraded state. This degradation is so consistent however, that it appears that this is a distinct group.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SPBW: 01	Open gently everted rimmed bowls	Simple, gently everted	Open, mid depth	Flat, slightly concave/ squared foot-ring	c.6 - 9cm	16 - 24cm	16 - 24cm	0.3 - 0.7cm

Parallels and Dating: Recovered from Sirjan where the class was manufactured in 10th - 11th century contexts within the potter's quarter (see SPW.YB above).

Origin: Southeast Iran.

96. SPW.N-ID (Degraded or Non-Identified Slip-Painted Ware)

Fabric No: 57 **Illustration:** None **Number of Sherds:** 23

Kennet Class: None.

Basis of Grouping: Decorative technique.

Defining Characteristics: Fine hard, red-bodied ware with slip-painted decoration but mostly too degraded to assign to any particular sub-class. There are also a few well-preserved sherds that do not fit into any of the other sub-classes.

Coherence: Disparate selection but all part of the same general tradition.

Decoration: Various.

Parallels and Dating: Recovered from Sirjan where the class was manufactured in 10^{th} - 11^{th} century contexts within the potter's quarter (see SPW.YB above).

Origin: Southeast Iran.

97. SPL.GW (Green on White Splashed Glazed Ware)

Fabric No: 84, 85 **Illustration:** Plates 108 & 109 **Number of Sherds:** 45

Kennet Class: None.

Basis of Grouping: Decorative technique and style.

Defining Characteristics: Bowls with a fine, well-levigated orange or cream coloured fabric. The former tend to have a white-slipped interior and exterior with the latter being left plain. Both have bright green splashed interiors covered over with a clear glaze that stops before the foot. The glaze has a tendency to peel and is either coarsely crazed or smooth.

Coherence: Well defined group though the fabrics suggest production at a number of different centres.

Decoration: Splashes of diffuse copper green, mostly randomly spread but sometimes in radial streaks. Decoration tends to be more concentrated on the interior.

Further Information: This class, especially the version with a cream coloured body is extremely difficult to distinguish from the East Asian Green and White Splashed Glazed Ware (GWSG).

Vessels occurring on Fabric 84 tend to be smaller and more finely thrown.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SPL.B: 01	Open bowls with simple of everted rims	Simple or gently everted	Open, mid depth	Flat or with foot-ring	Not known	17 - 24cm	17 - 24cm	0.4 - 0.8cm

Parallels and Dating: At Siraf Clear Splashed Glazed Wares, both polychrome and green and white, together with Opaque Splashed Glazed Ware emerge as part of the second stage in the Samarra horizon during Period 5 of the Site A sequence; a phase later than TIN.W1 and TIN.CT (Whitehouse, 1979, 52, fig. 3). A recent study of surface finds from different historically dated

areas of Samarra itself has confirmed the fact that SPL.GW and SPL.P were introduced later than the earliest elements of the Samarra horizon, probably during the mid 9th century and certainly before the occupation of al-Mutawakkiliyya in AD 861 (Northedge & Kennet, 1994: 33).

Origin: Petrographic analysis of a selection of SPL.GW sherds from Siraf has demonstrated that the class was manufactured at a number of different centres as seven different petrofabrics were identified, one from southern Mesopotamia, three from the Siraf area, including one from the Site D pottery at Siraf itself, and three from other kilns in Iran (Mason & Keall, 1991: 62-3).

98. SPL.P (Polychrome Splashed Glazed Ware)

Fabric No: 84, 85 **Illustration:** Plate 110 **Number of Sherds:** 96

Kennet Class: SPLASH.

Basis of Grouping: Decorative technique and style.

Defining Characteristics: Small to large sized bowls, mostly with simple rims, though flanged types also occur as well as vertical rims on shallow dishes. Bases tend to be flat or flat with incised rings, though squared foot-rings also occur. Interiors and exteriors are white slipped and splashed with green, yellow and purple/brown decoration under a transparent glaze. The bulk of the assemblage is on finely levigated, densely fired orange fabric (Fabric 85), about 20% occurs on a different, fine, cream-coloured body (Fabric 84). There are also a few pieces with a noticeably coarser fabric containing gritty inclusions.

Coherence: Coherent stylistic group but clearly some variation in the fabric composition suggesting distinct productions of the ware at different centres.

Decoration: The splashing is sometimes arranged in spots or streaks but often it is entirely haphazard. Decoration tends to be more concentrated on the interior.

Further Information: There is clearly much more work to be done on sub-dividing the Splashed Glazed Ware assemblage based on readily discernable differences in fabric composition and firing, though a much larger assemblage would be needed for this to be possible.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SPL.P: 01	Simple straight rimmed bowls	Simple straight	Open, mid depth	Flat, or with foot-ring	Not known	17 - 21cm	17 - 21cm	0.5 - 0.7cm
SPL.P: 02	Everted rimmed bowls	Simple everted flange	Open, mid depth	Flat, or with foot-ring	Not known	28cm	28cm	1cm
SPL.P: 03	Simple vertical rimmed dishes	Simple vertical rim	Open, shallow profile	Flat	Not known	13cm	13cm	0.6cm

Parallels and Dating: The class is part of the second stage of the Samarra horizon, which can be dated to around the middle of the 9th century (see SPL.GW above).

Origin: Southern Mesopotamia and southern Iran (see SPL.GW above).

99. GRAF.EP (Early Polychrome Sgraffiato)

Fabric No: 85 **Illustration:** Plate 101 **Number of Sherds:** 58

Kennet Class: EGRAF.

Basis of Grouping: Decorative technique and style.

Defining Characteristics: Hard, finely levigated orange/pink coloured fabric bowls. Most of the vessels have simple or gently everted rims though there are some small dishes that have a fattened rim with a notched top and a small-everted flange. Bases are mostly flat or flat with an incised ring. Squared foot rings also occur. Interior and exterior surfaces are white slipped and splashed with green, yellow and purple/brown decoration under a transparent glaze which stops before the foot. Interior surfaces are also decorated with incised decoration cutting though the white slip to reveal the darker body below.

Coherence: The class is very similar to SPL.P both in the range of vessel forms and the character of decoration. The only appreciable difference is the presence in this class of incised decoration, which may be part of a simultaneous repertoire of decoration. Given the fact that the assemblage is in sherd form, the incised/not incised distinction is rather arbitrary. At the same time, it is noteworthy that none of the GRAF.EP sherds display the cream coloured body found on a significant portion of the SPL.P assemblage and this point combined with the fact that there appears to be significant chronological difference in the two groups at Siraf (Whitehouse, 1979: 54), means that the distinction is most likely of relevance.

Decoration: The splashing is often arranged in spots or streaks but it can also be entirely haphazard. The incised lines are fine and the inscribing carefully executed. The incised decoration occurs only on the interior, whilst the splashing can occur on both surfaces although it is more frequent on the interior.

Form(s)	Description	Rim	Body	Base	H	W	D	T
GR.EP: 01	Simple straight rimmed bowls	Simple straight	Open, mid depth	Flat, or with foot-ring	Not known	17 - 21cm	17 - 21cm	0.4 - 0.7cm
GR.EP: 02	Everted rimmed bowls	Simple everted flange	Open, mid depth	Flat, or with foot-ring	Not known	28cm	28cm	0.4 - 0.7cm
GR.EP: 03	Vertical rimmed dishes	Vertical fattened & everted or notched	Open, shallow profile	Flat	Not known	13 - 14cm	13 - 14cm	0.5 - 0.6cm

Parallels and Dating: At Siraf GRAF.EP (Style I Sgraffiato) was introduced as one of the later elements in the Samarra horizon, probably during the early 10th century (Whitehouse, 1979: 59). Certain changes that occurred in the style and production of Sgraffiato in the later 11th century allow one to distinguish GRAF.EP from the later styles (Kennet, 2004: 34).

Origin: Southern Iran and southern Mesopotamia?

100. GRAF.TL (Thin-Lined Sgraffiato)

Fabric No: 84 **Illustration:** Plate 107 **Number of Sherds:** 10

Kennet Class: None.

Basis of Grouping: Decorative technique and style.

Defining Characteristics: Most of the sherds belonging to GRAF.TL have quite a badly degraded glaze, though where it is preserved it appears thin and semi-transparent with a greenish yellow hue. All examples are unslipped and have very fine (<0.5mm) and carefully incised decoration cut directly into the body. Most pieces have a fine cream-coloured body (Fabric 84), though pieces with a hard orange coloured body (Fabric 85) also occur.

Coherence: Coherent decorative style but glaze is mostly missing so it is difficult to tell how similar the style may originally have been.

Decoration: Fine detailed swirling lines cut directly into the body in a style that clearly links the class to the early Sgraffiato tradition.

Parallels and Dating: Appears to belong to the early Sgraffiato tradition that began in the early 10th century and ended when early Sgraffiatos were replaced in late 11th century (Kennet, 2004: 34).

Origin: Southern Mesopotamia?

101. GRAF.H (Hatched Sgraffiato)

Fabric No: 85 **Illustration:** Plate 104 **Number of Sherds:** 77

Kennet Class: HGRAF.

Basis of Grouping: Decorative technique and style.

Defining Characteristics: Thin walled bowls (3-5mm thick) often with simple rims, but also including more complex examples such as types with a chamfered exterior lip or small vertical rimmed dishes with a thickened and everted lip. The fabric is hard, well levigated and fired to an orange/pink. Interiors and often exteriors are white slipped with interiors splashed and incised with motifs in filled with hatching. Slipped surfaces are covered over with a transparent shiny led-glaze.

Coherence: Coherent sub-class though more than one production represented.

Decoration: Fine incised decoration including quickly executed abstract swirls or more delicate pseudo-calligraphic motifs, both of which contain elements in-filled with hatching. On top of the incised decoration are randomly arranged splashes of green, brown/purple and sometimes yellow with some areas of white left in between.

Parallels and Dating: Found at Kush from Phase E-06 onwards, though peaking in Phase E-08/E-09 suggesting an 11th - 12th century date range (Kennet, 2004: 35, table 3). This dating appears to be supported by the evidence from Shanga where the equivalent Group 5a class occurs principally between Phases 10 - 14 of Trench 6-10, placing it in a date range of AD c.1000 - 1150 (Horton, 1996: 289, table 14).

Origin: Stein's test excavation of a waster pile associated with a production site at Tizian as well as the collection that he made from the nearby site of Qalat-i-Jamshid produced a concentration of stylistically uniform and rather distinctive Hatched Sgraffiato (Stein, 1937: 90-91, pl. IV) identical to many of the finds that have been made within East Africa (Horton, 1996: 284, fig. 206, a-l; Chittick, 1984: pl. 32, a,b; Chittick, ii.1974: pl. 11, d; Priestman, In Press) and on the south coast of Yemen (Rougeulle, 2005: 228, fig. 3, 1-19, fig. 4, 1-11) as well as the majority of the finds represented within the GRAF.H class represented here. As such GRAF.H appears to be very closely associated with CHAMP, another style apparently produced at the

same site. Certain variations within GRAF.H suggest that there were further manufacturing sites that used the hatching technique.

102. CHAMP (Champlevé Sgraffiato)

Fabric No: 85 **Illustration:** Plate 103 **Number of Sherds:** 10

Kennet Class: CHAMP.

Basis of Grouping: Decorative technique.

Defining Characteristics: Open bowls with gently everted rims and flat based with a turned boss in the centre. Exteriors are generally plain. Interiors are white slipped and covered with a clear yellow tinted glaze. Just one example has a green tinted glaze. Broad areas of the slip have been cut away to produce a striking cream and rich hazel brown colour scheme. The fabric is all of a hard, well levigated, orange/pink firing variety.

Coherence: Examples in the Williamson Collection are rather few and stylistically varied. Potentially it should be possible to further sub-divide the class, particularly into the simple shaved and complex decorated styles (see below)

Decoration: The interiors have a white slip that has been cut away either in a number of irregularly placed broad shavings radiating obliquely from the centre of the vessel, or in complex motifs that sometimes occupy most of the vessel surface.

Form(s)	Description	Rim	Body	Base	H	W	D	T
CLEV: 01	Mixed bowls forms	Gently everted or gently flanged	Open, mid depth	Flat with a turned boss	Not known	18 - 31cm	18 - 31cm	3.5 - 6mm

Parallels and Dating: Champlevé appears to be a relatively common element of the East African coast Sgraffiato assemblage occurring at Manda and Kilwa as one of the principle Sgraffiato types of the 11th - 13th centuries (Chittick, 1984: 79, pl. 32 c,f; Chittick, ii.1974: 303, pl. 111 c,d) and at Shanga from Phase 11 - 16 of Trench 6-10, again dated to the 11th - 13th centuries (Horton 1996: 'Group 5b', 284, table 14). At Kush a small quantity appears from Phase E-10, dated to the late 13th century or later (Kennet, 2004: 37-38, table 3).

Origin: There are relatively small quantities of the class both in the Williamson Collection and at Kush (Kennet, 2004: 37) compared with Shanga, Manda, Kilwa and Andaro in East Africa and Sharma on the south coast of Yemen (Horton 1996; Chittick, 1984; Chittick, ii.1974; Priestman, In Press; Rougeulle, 2005), which indicates that Champlevé was probably more common as an export ware than it was within the Persian Gulf; a situation that is equally true of late Monochrome Sgraffiato. Stein's test excavation of a large mound of firing debris adjacent to a production area that he identified at the port site of Tizian, on the Makran coast, produced a significant concentration of CHAMP and GRAF.H of a particularly uniform and recognisable style (Stein, 1937: 90-91). Similar material with pseudo-calligraphic radial shavings occurs at the neighbouring site of Qalat-i-Jamshid (Stein, 1937: pl. IV) and this appears to be the same as that represented on the majority of the sherds in the Collection and those illustrated from East Africa and Yemen. Variations within the Champlevé assemblage in the Williamson Collection suggest however that there were other production centres using the same technique.

103. GRAF.LP (Late Polychrome Sgraffiato)

Fabric No: 85 **Illustration:** Plate 102 **Number of Sherds:** 49

Kennet Class: PGRAF.

Basis of Grouping: Decorative technique and style.

Defining Characteristics: Small, thin-walled bowls with simple rims and flat bases and a turned central boss. The fabric is hard, well levigated and fired to a orange/pink. Interiors and sometimes exteriors are white slipped, splashed and covered over with a clear led-glaze. Interiors also have fine (<0.5mm) incised decoration cut through the slip. The glaze in this class has a tendency to degrade leaving a dry-looking slipped surface with splashed colour still adhering.

Coherence: Coherent sub-class.

Decoration: Splashes of slightly diffuse pale green, brown/purple and yellow often separated by large areas of plain white slip with fine carefully etched incised decoration.

Form(s)	Description	Rim	Body	Base	H	W	D	T
GR.LP: 01	Small thin walled bowls	Simple	Open, mid depth	Flat with turned central boss	Not known	14cm	14cm	4 - 6.5cm

Parallels and Dating: The style of the incised decoration and the presence of slip, splashing and glaze on the exteriors of a significant portion of the sherds suggest an early date for this class, however the dating of the material from Kush demonstrates clearly that the class belongs to the later Sgraffiato tradition as it occurs from Phase E-09 onwards dated from the 12th - 13th century (Kennet, 2004: 37, table 3).

Origin: Southern Iran?

104. GRAF.DI (Polychrome Splashed Glazed Ware)

Fabric No: 85 **Illustration:** Plate 106 **Number of Sherds:** 4

Kennet Class: None.

Basis of Grouping: Decorative technique.

Defining Characteristics: Small, deep, straight-sided bowls either with a projecting collar just below the rim or a gently everted lip. Both the interior and exterior are white slipped, bright green and brown splashed and clear lead-glazed in a colour scheme reminiscent of GRAF.B. The most distinctive aspect of the class is the type of incised decoration which includes areas where the surface has been deeply cut away framed by traditional Sgraffiato incisions on the exterior. The fabric is hard, well levigated and fired to an orange/pink.

Coherence: Coherent and distinctive sub-class.

Decoration: Interior and exterior splashed with bright green and brown that covers the entire vessel surface. Exteriors are decorated with triangles cut deeply into the surface framed by regular Sgraffiato incisions.

Form(s)	Description	Rim	Body	Base	H	W	D	T
GR.DI: 01	Small straight sided bowls	Gently everted or projecting collar below lip	Half closed, deep and straight sided	Not known	c.10 - 12cm	14 - 18cm	14 - 18cm	4.5 - 6cm

Parallels and Dating: Appears to be the same as Type 5p from Shanga, small quantities of which occur between Phase 11 - 17 in Trench 6-10, dated to the 11th - 14th centuries (Horton, 1996: 286, table 14, fig. 209, a,b). The 14th century sherds are probably residual as the GRAF tradition went out of production by the end of the 13th century. The same class has also been noted in Period II contexts dated to the 12th - 13th centuries at Manda (Chittick, 1984: pl.34, a,b).

Origin: Southern Iran?

105. GRAF.S (Spotted Sgraffiato)

Fabric No: 85 **Illustration:** Plate 105 **Number of Sherds:** 16

Kennet Class: None.

Basis of Grouping: Decorative technique and style.

Defining Characteristics: Small, thin-walled bowls with gently everted rims or everted flange rims and flat bases with turned rings or a concave recess. The fabric is finely levigated and fired to orange/pink. Interiors are white slipped, splashed and incised and covered over with a transparent shiny led-glaze. The characteristic feature of the class is the decoration, which is comprised of small spots placed between double incisions. Exteriors are mostly plain though some pieces have slip stepping onto the exterior and one piece is slipped and glazed on the exterior.

Coherence: Coherent and distinctive class which falls somewhere between the GRAF and SPW traditions.

Decoration: Well spaced diffuse splashes of green and brown combined with finely incised decoration cut through the slip to reveal a darker body below. Incised lines are often cut in parallel grooves with small, regularly spaced dots placed in the space between.

Parallels and Dating: No known parallels exist for this class although it appears to be related to the SPW tradition. At the same time, the class displays features typical of the late GRAF tradition of the 11th - 13th centuries, such as the unglazed exterior and the Iranian style fabric and forms.

Origin: Southern Iran?

106. GRAF.B (Two-Tone Sgraffiato)

Fabric No: 84, 85 **Illustration:** Plate 100 **Number of Sherds:** 54

Kennet Class: BGRAF.

Basis of Grouping: Decorative technique and style.

Defining Characteristics: Open bowls with simple, flanged or rolled-and-squared rims and a wide range of base forms including flat, turned and concave, turned with a raised central boss or a squared foot-ring. Vessels tend to be in the larger size range than previously described Sgraffiato classes. The fabric is mostly hard, well levigated and fired to an orange/pink, though there are two sherds with a cream coloured body (Fabric 84) and a number of sherds with a coarser fabric with about 2% coarse inclusions all under 0.5mm and about 3-5% sub-rounded voids at < 0.5 - 1mm. All of the later group are from Sirjan Survey sub-sites and were probably manufactured in that area. The vessels are generally white slipped and clear lead-glazed on to the interior only, with some slip and glaze stepping just over the rim exterior. The surfaces are covered in green and brown splashing and crude sgraffiato cut through the slip on the interior only.

Coherence: Reasonably coherent group, though the assemblage appears much more varied than the material from Kush and, as can be seen from the fabric description, the class was almost certainly manufactured in a number of different centres, which may have produced subtly different styles.

Decoration: Splashes of bright green and brown covering the whole of the interior surface, often with a dark brown rim and green/yellow below. Unlike the Kush assemblage, GRAF.B with green rims and yellow below is not a common colour scheme in the Williamson Collection, although a few examples do occur. The incised decoration is executed in bold, slightly clumsy thick lines (0.5 - 1mm) in a loose floral style similar to GRAF.G.

Further Information: Most of the sherds come closer to Kennet's Type 26 with a flanged rim rather than Type 25 with a simple rim. At Kush Type 25 is the most common GRAF.D form.

Form(s)	Description	Rim	Body	Base	H	W	D	T
GR.B: 01	Assorted bowls forms	Simple, flanged, or rolled & squared	Open, mid depth or deep with upright sides	Flat, turned boss or foot-ring	Not known	24 - 34xm	24 - 34cm	0.5 - 1cm

Parallels and Dating: The class occurs at Kush from Phase E-08 onwards and is clearly closely related to the GRAF.G style suggesting that it should be dated to the later 11th - 13th centuries (Kennet, 2004: 36-7, table 3).

Origin: Southern Iran?

107. GRAF.G (Monochrome Green Sgraffiato)

Fabric No: 84, 85 **Illustration:** Plate 97 **Number of Sherds:** 153

Kennet Class: GGRAF.

Basis of Grouping: Decorative technique and glaze colour.

Defining Characteristics: A range of mostly open bowls with white-slipped interiors, incised decoration and clear bright green glaze. Some vessels have slip and glaze stepping onto the rim exterior or in some cases extending further down the exterior wall. The glaze colour varies considerably from brown to dull green, bright bottle green, olive green through to light faded turquoise green. In some pieces the underlying white slip appears to be thin and patchy and this creates a mottled green and brown effect. Where the white slip is thicker the overlying glaze generally appears a brighter green. Vessel forms include open bowls mostly with simple or less often flanged rims similar to Kennet's Type 26. Bases are usually flat with a chamfered outer edge, though there are examples with a turned central boss. One example from a closed jar is

also represented. The fabric is mostly hard, well levigated and fired to an orange/pink, two sherds with a cream coloured fabric were also noted.

Coherence: Similar in many respects to GRAF.B except that the colour scheme does not include splashes of brown. Given the fact that there appears to be no chronological distinction between the two groups, the division followed here may be in many respects arbitrary. GRAF.G includes a wide range of subtly different stylistic groups and it is clear from the examination of this assemblage alone that it was manufactured in a large number of different centres.

Decoration: White-slipped interior covered with a monochrome green glaze. Incised decoration is usually bold, slightly clumsy and etched in thick lines (0.5 - 1mm) in a loose floral style similar to GRAF.B.

Form(s)	Description	Rim	Body	Base	H	W	D	T
GR.G: 01	Mixed bowls forms	Simple or flanged	Open, mid depth	Flat or turned central boss	Not known	13 - 30cm	13 - 30cm	4.5 - 9.5cm

Parallels and Dating: Occurs in abundance in the Kush sequence from Phase E-08 onwards, indicating an appearance in the late 11th century (Kennet, 2004: 35-36, table 3). GRAF.G together with other late Sgraffiatos may have been knocked out of production by the introduction on mass of Longquan Celadon in the later 13th century or alternatively as a consequence of the Mongol invasion (P. Morgan, 1991: 78). This date range is supported by the East African evidence. At Shanga, Groups E, F and G though F in particular, appear to belong to this class, which first appears in the sequence from Phase 10, dated to the 11th century (Horton, 1996: 284, 286, table 14). At Manda and Kilwa GRAF.G forms an important element of the 'simple Sgraffiato' assemblage, which together with other 'late Sgraffiatos', dominate the Period 2 and Ib assemblages of the mid 11th - late 13th centuries (Chittick, 1984: 79; Chittick, ii.1974: 303).

Origin: GRAF.G together with MONO.G appears to have been one of the most widely manufactured elements of the Sgraffiato tradition. Evidence for its production has been noted so far at Ghubayra (Bivar, 2000: 59-60), two isolated kiln sites between Buluk and Fars in inland Kerman (Prickett, 1986a: 1168-69) and at K130F on the Minab plain. It is likely that production centres for this class existed throughout southern Iran.

108. GRAF.Y (Monochrome Yellow Sgraffiato)

Fabric No: 84, 85 **Illustration:** Plate 99 **Number of Sherds:** 13

Kennet Class: The class is unrelated to the YGRAF at Kush.

Basis of Grouping: Decorative technique and glaze colour

Defining Characteristics: Similar to GRAF.M except that the glaze is a much brighter acidic yellow with a slightly opaque quality. Like GRAF.M the glaze also has a fine black speckling. The body is generally hard, well levigated and fired to an orange/pink colour though two sherds occur on a fine cream-coloured body as well. The vessels are all small bowls with simple, gently everted or flanged rims, flat or concave bases and walls that are 4-5mm thick. Vessels are mostly slipped and glazed on the interior only with finely incised (<0.5mm) decoration cut through the slip. Some examples also have clear glaze on the exterior.

Coherence: Coherent sub-class.

Decoration: Finely and carefully incised swirling lines that appear similar to the early style of Sgraffiato decoration, though the glaze suggests that the class belongs to the later style groups. Perhaps the class comes from a transitional phase.

Parallels and Dating: There are no known direct parallels or this class although it is clearly related to the later monochrome Sgraffiato tradition, in particular GRAF.M and GRAF.G, which has been dated to the later 11th - 13th centuries at Kush (Kennet, 2004: 35-6).

Origin: Southern Iran?

109. GRAF.M (Monochrome Mustard Glazed Sgraffiato)

Fabric No: 84, 85 **Illustration:** Plate 98 **Number of Sherds:** 33

Kennet Class: GRAF.M could probably be divided into two groups (see below), the speckled group is the same as MGRAF at Kush, while the mottled brown and yellow un-speckled group belongs to an unrelated stylistic group.

Basis of Grouping: Decorative technique and glaze colour.

Defining Characteristics: The class displays similar characteristics to GRAF.G in terms of vessel forms and decorative style. The main difference is that the glaze, instead of being green, is usually a speckled mustard yellow with darker brown patches. The body is mostly of the hard, well levigated, orange/pink firing variety; two sherds are on a slightly different cream coloured fabric probably more closely related to the examples recovered from Kush (Kennet, 2004: 36). Most of the forms are small bowls with concave bases or squared foot-rings, simple or gently everted rims, and walls that are 4-6mm thick. Two examples of closed forms also occur, one of which is glazed on interior and exterior and the other on the interior only. Bowls are mostly slipped and glazed with crudely executed incised decoration on the interior only with some slip and glaze stepping onto the exterior rim.

Coherence: There is some variation in glaze colour and the degree of speckling. Un-speckled, plain yellow examples are also included within the class. With a larger assemblage, it would probably be possible to further sub-divide the group into plain and speckled versions.

Decoration: Quickly etched broad (0.5mm) incised lines cut through the white slip to reveal the darker red body below. Decoration tends to include simple swirling motifs and leafy scrolls.

Parallels and Dating: The class clearly belongs to the later Sgraffiato tradition occurring at Kush from Phase E-08 onwards suggesting that it circulated from the later 11th century until the 13th century when the Sgraffiato tradition ended (Kennet, 2004: 36, table 3).

Origin: Southern Iran?

110. GRAF.D (Degraded Sgraffiato)

Fabric No: 84, 85 **Illustration:** None **Number of Sherds:** 55

Kennet Class: DGRAF.

Basis of Grouping: Decorative technique and material condition.

Defining Characteristics: Assorted material that clearly belongs to the Sgraffiato tradition on the basis of fabric, form, traces of glaze or incised decoration, but which is too degraded to

assign to any particular sub-class. Most of the material is on a hard, well levigated fabric fired to an orange/pink, although there are also a few pieces with a cream coloured fabric.

Coherence: Mixed material belonging to the Sgraffiato class.

Decoration: Various.

Parallels and Dating: The material could date any time within the Sgraffiato period from the 10th - 13th centuries, although red fabrics are more commonly associated with the later Sgraffiatos of the 11th - 13th centuries.

Origin: Southern Iran?

111. GRAF.N-ID (Non-Identified Sgraffiato)

Fabric No: 85 **Illustration:** None **Number of Sherds:** 5

Kennet Class: None.

Basis of Grouping: Decorative technique.

Defining Characteristics: Sherds of Sgraffiato that are well preserved but which cannot be assigned to any of the recognised Sgraffiato sub-classes, i.e. pieces with unique decorative schemes.

Integrity of Group: Varied, but all part of the same production tradition.

Decoration: Varied but all include sgraffiato incised through white slip.

Parallels and Dating: All of the sherds appear to be related to the later Sgraffiato tradition of the later 11th - 13th centuries.

Origin: Southern Iran.

112. MONO.G (Monochrome Green Glazed Ware)

Fabric No: 85 **Illustration:** Plate 95 **Number of Sherds:** 118

Kennet Class: All open forms are equivalent to Kennet's GMONO.1. The closed vessel form, MON.G: 06, is the same as Kennet's LGJARS.

Basis of Grouping: Glaze quality and colour and fabric.

Defining Characteristics: Monochrome green glazed pottery over a white slip in the same tradition of manufacture as late green Sgraffiato, but without incised decoration. The range of vessel forms in the class is wide. The most common forms are Kennet's Type 25 and 29, (Kennet, 2004: fig. 14). In addition there are more rare forms including bowls with everted rims, small rounded bowls with evenly curved walls and thick rims, oil lamps with a projecting wick spout and small strap handles and a number of closed jar forms equivalent to Kennet's LGJARS (Kennet, 2004: 38). Bowl bases are most often flat with chamfered edges, though examples with a turned central boss also occur. The glaze colour varies widely, including a similar tonal range to GRAF.G (described above). Examples that are brighter green tend to have a thicker white slip. Some pieces have no slip and with these the glaze appears a dull olive green. The fabric is also quite varied. All are on a fine, well levigated, fully oxidised, mostly reddish/orange

coloured fabric, though there are also a few pieces on a pale cream coloured fabric. Closer examination suggests that there may be as many as seven different fabric groups within the class, but the differences between them are too subtle to reliably distinguish using a hand lens.

Coherence: Clearly MONO.G is part of the same production tradition as GRAF.G, a point that is demonstrated by the occurrence of MONO.G and GRAF.G wasters on the same forms together with stacking trivets from the site K130F in the Minab plain. Like GRAF.G the variation in glaze colour and fabric in this class strongly suggest that it was manufactured in many different centres.

Decoration: Plain green glaze on a white slip.

Form(s)	Description	Rim	Body	Base	H	W	D	T
MON.G: 01	Small deep bowls	Simple, rounded lip	Open, steep sides	Flat or turned central boss	c.7 - 10cm	12 - 18cm	12 - 18cm	0.45 - 0.6cm
MON.G: 02	Medium sized open bowls	Simple. Rounded lip	Open, mid depth	Turned central boss	c.10 - 12cm	16 - 20cm	16 - 20cm	0.55 - 0.9cm
MON.G: 03	Dumpy bowls	Simple & fattened	Rounded walls	Flat	c.6 - 7cm	15 - 20cm	15 - 20cm	1 - 1.3cm
MON.G: 04	Other mixed bowls & dishes	Various	Open, mid depth or shallow	Flat or turned central boss	Not known	18 - 31cm	18 - 31cm	0.5 - 0.9cm
MON.G: 05	Oil lamps	Simple, gently inverted lip	Rounded profile, half closed	Flat	2.5 - 2.9cm	6.2 - 7.5cm	6.2 - 7.5cm	0.3 - 0.6cm
MON.G: 06	Closed jars	Not known	Closed globular form	Flat	c.22cm	c.20cm	11cm	0.55cm

Parallels and Dating: The class is very closely related to GRAF.G and was probably manufactured together with this class, as is indicated by the occurrence of GRAF.G and MONO.G wasters together with trivets from K130F. The dating should therefore be the same, although at Kush MONO.G appears slightly earlier than GRAF.G from Phase E-06 onwards, suggesting that should be dated to the 11th - 13th centuries (Kennet, 2004: 44, table 3).

Origin: Southern Iran (See GRAF.G above).

113. MONO.Y (Monochrome Green Glazed Ware)

Fabric No: 84, 85 **Illustration:** Plate 96 **Number of Sherds:** 38

Kennet Class: None.

Basis of Grouping: Glazing quality and colour and fabric.

Defining Characteristics: Very similar to MONO.G (described above) except that this class rarely has a white slip and the glaze is a pale green, yellow, mottled yellow and brown, or brown. The glaze is restricted to the interior though sometimes it steps onto the rim exterior and occasionally further down for up to 4cm. Mostly the glaze stops at the rim itself. The range of vessel forms appears to be narrower than MONO.G. Most appear to be medium sized bowls with well curved profiles, similar to Kennet's Type 29, with a simple rim and a flat base with turned rings or a concave recess. Other one-off bowl forms also occur together with a single sherd from a closed vessel, which is glazed on both the interior and exterior. The fabric is mostly hard, well levigated and fired to orange/pink thought there are also a few sherds with a different creamy buff coloured fabric with a 'dry' grainy structure.

Coherence: Coherent group, though both glazing and fabric suggest a number of different production centres for the class.

Decoration: Some pieces have a green rim fading to yellow below, but most vessels are monochrome yellow/green or mottled yellow/brown.

Form(s)	Description	Rim	Body	Base	H	W	D	T
MON/Y: 01	Small simple bowls	Simple rounded lip	Open, steep curving sides	Flat	c.7 - 10cm	12 - 18cm	12 - 18cm	0.45 - 0.6cm
MON/Y: 02	Vertical rimmed bowls	Vertical with a simple or gently everted lip	Open, mid depth to shallow	Flat with turned ring or recess	c.9 - 10cm	24 - 25cm	24 - 25cm	0.5 - 0.8cm
MON/Y: 03	Small jars	Notched	Rounded, un-shouldered	Not known	c.13cm	c.13cm	8cm	0.6cm

Parallels and Dating: The class represents a variant form of MONO.G and is therefore likely to date to the 11th - 13th centuries.

Origin: Southern Iran?

114. MGP.1-3 (Manganese Purple Underglaze Painted Ware, Groups 1 - 3)

Fabric No: N/A

Kennet Class: MGP.1 and 2 are the same as MGPAINT.1 and 2 at Kush and al-Mataf. MGP.3 is part of the general UGP tradition that falls within Kennet's generic UNDERGL class at al-Mataf.

Basis of Grouping: Decorative style.

Defining Characteristics: Three fairly distinct classes but with some general connecting features in terms of colour scheme and decorative technique.

MGP.1 – (44 Sherds) Mostly flange-rimmed bowls with blue-green glazed interiors and thick black manganese underglaze painted decoration. The glaze is usually completely degraded leaving only the black paint standing proud of the body. Common motifs include chevrons around rim and radial panels filled with dots or hatching within the body. The fabric tends to be darker than that described by Kennet for the same class (Kennet, 2004: 40) being mostly a buff yellow (10YR 8 - 7/4) with frequent, (1 - 2%) well-sorted, rounded, translucent or opaque white and grey quartz like inclusions (0.3 - 1mm), some (1 - 2%) small (0.1 - 1mm) voids and variable levels (1 - 7%) of fairly well sorted large (0.5 - 4mm) angular lime fragments. The majority of the pieces belong to Kennet's Type 26 with a flanged rim and Type 31 with a flanged and hooked rim (Kennet, 2004: fig. 12) of which the latter is more numerous (see Plate 129).

MGP.2 – (22 Sherds) Open medium-sized bowls with a sharply squared foot-ring or a shallow concave hollow with incised grooves and a rim that is usually simple and straight with a rounded lip. There is also one example with a flanged and beaked rim similar to Kennet's Type 31 represented in MGP.1 (Kennet, 2004: fig. 12). The vessels have a shiny translucent yellowish-green tinted glaze on the interior only with thick (2 - 5mm) slightly diffuse purple manganese decoration with in-fillings of cobalt or turquoise splashes. Decorative motifs include simple radiating lines and horizontal bands below the rim in-filled with zigzag lines or dots. The fabric is quite similar to, but a bit harder than Fabric 73 found on REDYEL and some of the other

UGP classes. It is fine-grained and bright cream in colour (about 2.5Y 9-10/4) with occasional grit elements of variable size (0.5 - 2.5mm) and frequent (1 - 3%) small (0.5 - 1mm) angular voids. There is also another version of the fabric represented in the class which is much more coarse, darker, and is filled with abundant burnt black voids. This fabric is associated with a slightly different decorative scheme. This second group certainly belongs to a separate though related sub-class, though the number of sherds represented is too small to define reliably at present (see Plate 130).

MGP.3 – (64 Sherds) Medium sized bowls with either a simple, gently everted or everted and fattened rim and a turned foot-ring with squared outer edge and cupped interior. The interiors of the vessels are generally covered with a thick, semi-opaque white base glaze, which has a slightly stippled surface or a completely shiny gloss similar to UGP.G1-2. The shiny version tends to have quite coarse crazing while the stippled version has a medium fine craze. When the glaze is degraded, which it often is, it takes on a slight iridescence and the colours below the glaze soften in brightness. Under the glaze the stippled glaze version has fairly simple broad manganese purple black or cobalt blue lines (2 - 4mm), in-filled with splashes of turquoise with large blank areas left between which appear white or more often a light-purple-pink. The shiny glazed version has the same repertoire of colours, however the motifs tend to occupy more of the surface and to be executed in a more delicate and fluid floral style. The fabric tends to be slightly varied but is a pale yellow (2.5Y 8/5) and fine with a slightly irregular fracture, a grainy, slightly loose composition, with numerous (3 - 7%) small (0.1 - 1mm) voids and various regular (2 - 5%), fine (<0.5mm), sub-angular, well-sorted, mixed sandy inclusions including quartz and lime in some pieces (see Plate 131).

Coherence: Each of the sub-classes is reasonably coherent and readily recognisable, though certain sub-variations have been noted. Overall all three MGP classes belong to a related stylistic tradition.

Form(s)	Description	Rim	Body	Base	H	W	D	T
MGP.1: 01	Flanged and hooked rimmed bowls	Everted flange with up turned hook	Open, mid-depth	Flat or squared foot-ring	c.8 - 9cm	24 - 26cm	24 - 26cm	0.7cm
MGP.1: 02	Flanged rimmed bowls	Everted flange with slightly fattened lip	Open, mid-depth	Flat or squared foot-ring	c.12cm	30cm	30cm	0.7cm
MGP.1: 03	Steep sided bowls	Short folded flange, rounded lip	Open, steep sided	Flat or squared foot-ring	c.9cm	20cm	20cm	1cm
MGP.2: 01	Medium sized open bowls	Simple with a rounded lip	Open, mid-depth to shallow	Squared foot-ring or turned concave recess	Not known	Not known	Not known	Not known
MGP.3: 01	Medium sized open bowls	Simple, gently everted or everted and fattened	Open, mid-depth	Turned foot-ring with cupped interior	c.5 - 12cm	14 - 28cm	14 - 28cm	0.4 - 0.9cm

Parallels and Dating:

MGP.1 – Found at Kush from Phase E-06 onwards, although it is most abundant in the last two Phases. The class has not been noted at al-Mataf indicating that it was in circulation from the 11th - 13th centuries, that the peak of its circulation was in the

13th century and that it had gone out of production by the 14th century (Kennet, 2004: 40-41, table 3).

MGP.2 – Finds of the class in Ras al-Khaimah from Hulaylah and Area 74 as well as its absence from the excavations at al-Mataf, suggest that the class belongs to 17th -19th century period (Kennet, 2004: 41).

MGP.3 – There are no precise parallels for this class, however almost half of the glazed wares at al-Mataf are represented by a mixed assemblage of degraded UGP (Kennet, 2004: 'UNDERGL' 45). The class occurs throughout the sequence but only appears in significant quantities from Period II, dated to the 14th/15th century, after which it increases to a peak in Period IV, dated to the 16th century, and then gradually tails off through the rest of the sequence (Kennet, 2004: table 7). Whether UGP generally become less common after the 16th century seems unlikely. Certainly there is good evidence for its continued production and common occurrence on sites in the Minab area dated as late as the 19th/20th centuries (Kennet, *et al,* Forthcoming).

Origin: The general similarities between the MGP.1 fabric and that found on two coarse ware classes from Bahrain; LIME and a ware that Williamson names Ali Ware, indicate that MGP.1 may also have been manufactured in Bahrain. MGP.2 and MGP.3 were probably manufactured in southern Iran.

115. UGP.G1 (Glossy Underglaze Painted Ware, Group 1)

Fabric No: N/A **Illustration:** Plate 132 **Number of Sherds:** 18

Kennet Class: UGP appears to have been widely manufactured and there are many different styles, some of which are distinctive a readily recognisable. Most of the UGP sherds in the Williamson Collection have reasonably well preserved glaze, though in general UGP glazes are badly fitted and have a tendency to degrade. Although the UGP in the Williamson Collection is probably unrepresentative, and does not include the full repertoire of regional styles once in circulation, the presence of certain distinctive groups has allowed the class to be sub-divided into a number of different sub-classes based on a combination of fabric, glaze quality and decorative style. At al-Mataf, UGP represents almost half of the glazed ware assemblage, however, most of the material was too badly degraded to recognise specific styles. All of the UGP groups in the Williamson Collection, including UGP.G1, would fall within Kennet's UNDERGL class.

Basis of Grouping: Colour scheme and glaze quality.

Defining Characteristics: Small, open bowls with simple, either straight or everted flange-rims and a wide, thin, squared foot-ring or a flared foot-ring with a cupped interior with a raised central boss. The vessels are glazed on the interior and exterior with the glaze stopping some distance above the base or continuing all the way down to the bottom of the foot-ring. The glaze is a semi-opaque white with a smooth shiny surface, although it can become dull when abraded. Overall the class is similar to MGP.3 except that the underglaze decoration is executed mostly in cobalt blue and black. The fabric can either be a soft, brittle, bright yellow (10YR 8/5) with frequent (3 - 7%), fairly well-sorted, small (0.8 - 1mm), sub-angular quartz-like inclusions, or a finer harder fabric that is more compact and slightly lighter yellow (10YR 8/4) with only very occasional (<1%) small (0.8mm) sub-angular or sub-rounded inclusions.

Coherence: Coherent, although two fabric variants have been noted.

Decoration: Underglaze painted decoration in a fairly complex floral style, though there are also more simple spacious designs as well.

Form(s)	Description	Rim	Body	Base	H	W	D	T
UGP.G1: 01	Small open bowls	Simple with rounded lip or everted flange	Open, mid-depth	Wide foot-ring or flaring	c.7 - 9cm	18 - 26cm	18 - 26cm	0.6 - 0.9cm

Parallels and Dating: Although there are no precise parallels for UGP.G1 (see 'Kennet Class' above), evidence from al-Mataf suggests that the UGP tradition became prevalent during the 15th - 16th centuries (see MGP.3 above), after which it is likely to have continued in circulation as the most common glazed ware in the region until at least as late as the 19th century.

Origin: Southern Iran?

116. UGP.G2 (Glossy Underglaze Painted Ware, Group 2)

Fabric No: N/A **Illustration:** Plate 133 **Number of Sherds:** 28

Kennet Class: UGP with Turquoise and black decoration was recovered during the 1994 survey of the Sir and Jiri plains (MGTURQ) but not from Kush or al-Mataf. It is unlikely that MGTURQ belongs to the same stylistic sub-class as UGP.G2. UGP.G2 would be included within Kennet's generic UNDERGL class (see UGP.G1 above).

Basis of Grouping: Colour scheme and glaze quality.

Defining Characteristics: Small open bowls with a wide range of rim forms including simple with a straight rounded lip, everted and fattened, everted and beaked, or 'T' form with a flat top. The vessels are glazed on the interior and exterior with a glossy blue or blue-green glaze and decorated with black underglaze decoration. The fabric is the same as that of UGP.G1, which is either a soft, brittle, bright yellow (10YR 8/5) with frequent (3 - 7%), fairly well-sorted, small (0.8 - 1mm), sub-angular quartz-like inclusions, or a finer, harder fabric that is more compact and slightly lighter yellow (10YR 8/4) with very occasional (<1%) small (0.8mm) sub-angular or sub-rounded inclusions.

Coherence: Coherent stylistic sub-class clearly linked to UGP.G1.

Decoration: The decoration is executed in a fine floral style in crisp black pigment producing a decorative scheme strongly reminiscent of FRIT.TB.

Further Information: Some sherds that come from areas of the vessel without decoration or from undecorated vessels can be difficult to distinguish from ALK, particularly as many of the forms are the same, especially small bowls. The main difference appears to be the high gloss and slightly greenish tinge of the UGP.G2 glaze as opposed to the softer more turquoise appearance of ALK.

Form(s)	Description	Rim	Body	Base	H	W	D	T
UGP.G2: 01	Small open bowls	Simple, everted & fattened or beaked, 'T' form	Open, mid-depth	Not known	c.6 - 9cm	16 - 25cm	16 - 25cm	0.4 - 0.9cm

Parallels and Dating: Although there are no precise parallels for UGP.G2, evidence from al-Mataf suggests that the UGP tradition became prevalent during the 15th - 16th centuries, after

which it is likely to have continued in circulation as the most common glazed ware in the region until at least as late as the 19th century (see MGP.3 and UGP.G1 above).

Origin: Southern Iran?

117. UGP.C1 (Coarse Bodied Underglaze Painted Ware, Group 1)

Fabric No: N/A **Illustration:** Plate 134 **Number of Sherds:** 61

Kennet Class: The class has the same decorative scheme as MGTURQ though it is unlikely that it belongs to the same sub-class with the UGP tradition. UGP.C1 would be included within Kennet's generic UNDERGL class (see UGP.G1 above).

Basis of Grouping: Colour scheme and fabric.

Defining Characteristics: Medium sized bowls with a heavy squared foot-ring with a cupped interior and a low raised central boss. Very few diagnostic rims are associated with this class: those that are available are either flanged or fattened and angular with a slightly projecting lip. The vessels are covered on the interior only with a semi-opaque turquoise glaze, which has a consistent soft half-matt quality with moderate crazing, clearly distinct from UGP.G1-2. The interiors are also embellished with underglaze black decoration. The fabric is rather varied but includes the two variants described for UGP.G1 & 2 with the addition of some large (0.5 - 4mm) rolled or sub-angular dark brown inclusions that often project from the smoothed surfaces but can rarely be seen in the fresh section. The fabric tends to be very pale brown (10YR 8/4) or light brown (7.5YR 6.5/4).

Coherence: Coherent stylistic group with some significant variations in fabric that may offer the possibility of further sub-division.

Decoration: The black-on-turquoise decoration is executed in a crisp floral style combined with panels filled with lattice and other intricate filling devices.

Further Information: The class appears to represent an imitation of FRIT.TB and at times it can be difficult to distinguish the two.

Form(s)	Description	Rim	Body	Base	H	W	D	T
UGP.C1: 01	Medium sized open bowls	Flanged or fattened with a short everted lip	Open, mid-depth	Heavy squared foot-ring	c.8 - 10cm	22 - 30cm	22 - 30cm	4.5 - 1.1cm

Parallels and Dating: Although there are no precise parallels for UGP.C1, evidence from al-Mataf suggests that the UGP tradition became prevalent during the 15th - 16th centuries, after which it is likely to have continued in circulation as the most common glazed ware in the region until at least as late as the 19th century (see MGP.3 and UGP.G1 above).

Origin: Southern Iran?

118. UGP.C2 (Coarse Bodied Underglaze Painted Ware, Group 2)

Fabric No: N/A **Illustration:** Plate 135 **Number of Sherds:** 17

Kennet Class: UGP.C2 would be included within Kennet's generic UNDERGL class (see UGP.G1 above).

Basis of Grouping: Colour scheme and fabric.

Defining Characteristics: Essentially the same class as UGP.C1 above in terms of fabric and vessel forms, but with a white glaze with black underglaze decoration combined with diffuse in-filled zones of turquoise blue in a colour scheme reminiscent of Underglaze-Painted Frit.

Coherence: Coherent stylistic sub-class that is clearly directly related to UGP.C1 but with a different colour scheme.

Decoration: Similar decorative motifs to UGP.C1, mostly radial designs and heavy black bands and lines filled with diffuse turquoise blue.

Parallels and Dating: Although there are no precise parallels for UGP.C2, evidence from al-Mataf suggests that the UGP tradition became prevalent during the 15th - 16th centuries, after which it is likely to have continued in circulation as the most common glazed ware in the region until at least as late as the 19th century (see MGP.3 and UGP.G1 above).

Origin: Southern Iran?

119. UGP.F1 (Fine Bodied Underglaze Painted Ware, Group 1)

Fabric No: N/A **Illustration:** Plate 136 **Number of Sherds:** 51

Kennet Class: The class has the same decorative scheme as MGTURQ though it is unlikely that it belongs to the same sub-class with the UGP tradition. UGP.F1 would be included within Kennet's generic UNDERGL class (see UGP.G1 above).

Basis of Grouping: Colour scheme and fabric.

Defining Characteristics: Predominantly small, open bowls with a range of rim forms including simple with a straight rounded lip, flanged, flanged and beaked, or 'T' form with a flat top. A few sherds belonging to closed vessels are also represented, including a narrow necked bottle with a simple flaring rim. The class is almost identical to UGP.C1 with a turquoise-blue glaze and intricate black underglaze decoration except that the vessels are slightly more delicate and the body is fine with almost no coarse inclusions. Otherwise the colour and feel of the fabric is very similar.

Coherence: Coherent sub-class that is related stylistically to UGP.G2 and UGP.C1.

Decoration: Crisp black decoration under a bright turquoise glaze. The motifs include radial designs, floral patterns and loosely arranged panels filled with dots.

Form(s)	Description	Rim	Body	Base	H	W	D	T
UGP.F1: 01	Small open bowls	Simple, straight or beaked flange, 'T' form	Open, mid-depth	Delicate high squared foot-ring	c.6cm	14 - 22cm	14 - 22cm	0.5 - 0.8cm
UGP.F1: 02	Jars and bottles	Narrow neck with a flared rim	Shouldered with globular body	Not known	c.15cm	c.14cm	8cm	0.5 - 0.9cm

Parallels and Dating: Although there are no precise parallels for UGP.F1, evidence from al-Mataf suggests that the UGP tradition became prevalent during the 15th - 16th centuries, after which it is likely to have continued in circulation as the most common glazed ware in the region until at least as late as the 19th century (see MGP.3 and UGP.G1 above).

Origin: Southern Iran?

120. UGP.F2 (Fine Bodied Underglaze Painted Ware, Group 2)

Fabric No: N/A **Illustration:** Plate 137 **Number of Sherds:** 14

Kennet Class: The class has the same decorative scheme as BWEARTH though it is unlikely that it belongs to the same sub-class with the UGP tradition. UGP.F2 would be included within Kennet's generic UNDERGL class (see UGP.G1 above).

Basis of Grouping: Colour scheme and fabric.

Defining Characteristics: Essentially the same class as UGP.F1 in terms of vessel forms and fabric but with a white glaze with black, cobalt blue and turquoise underglaze painted decoration. The overall colour scheme is similar to UGP.BW though the fabric is light cream coloured instead of dark red. Both classes have clear stylistic links to FRIT.BW.

Coherence: Coherent stylistic sub-class that is clearly directly related to UGP.F1 but with a different colour scheme.

Decoration: Complex well-defined decoration including frames filled with lattice. Similar in style to FRIT.BW.

Form(s)	Description	Rim	Body	Base	H	W	D	T
UGP.F2: 01	Small open bowls	Various rim forms	Open, mid-depth	Squared foot-ring	c.6cm	14 - 22cm	14 - 22cm	0.5 - 0.8cm

Parallels and Dating: Although there are no precise parallels for UGP.F2, evidence from al-Mataf suggests that the UGP tradition became prevalent during the 15th - 16th centuries, after which it is likely to have continued in circulation as the most common glazed ware in the region until at least as late as the 19th century (see MGP.3 and UGP.G1 above).

Origin: Southern Iran?

121. UGP.BW (Blue & White Underglaze Painted Ware)

Fabric No: N/A **Illustration:** Plate 138 **Number of Sherds:** 25

Kennet Class: The class has the same decorative scheme as BWEARTH though it is unlikely that it belongs to the same sub-class with the UGP tradition. UGP.BW would be included within Kennet's generic UNDERGL class (see UGP.G1 above).

Basis of Grouping: Colour scheme and fabric.

Defining Characteristics: Mostly open bowls with a squared foot-ring and a simple, gently everted or flanged rim with a rounded lip. Closed forms are also represented. Open vessels are covered on the interior only with an opaque white glaze with dark cobalt blue, black or occasionally turquoise underglaze-painted decoration. The fabric is rather mixed but mostly it is fine and compact with no significant visible inclusions and is fired to a brick red or orange through to grey (2.5YR 4.5/8, 6/6 or 5/1).

Coherence: Coherent style but mixed fabric composition clearly belonging to a number of different productions. Technically the group is closely related to UGP.F2, both of which are stylistically related to FRIT.BW.

Decoration: Fairly intricate designs although the lines tend to be slightly diffuse.

Form(s)	Description	Rim	Body	Base	H	W	D	T
UGP.BW: 01	Small to medium open bowls	Simple, gently everted of flanged	Open, mid-depth	Squared foot-ring	c.6 - 8cm	16 - 30cm	16 - 30cm	0.5 - 1cm
UGP.BW: 02	Jars	Not known	Rounded	Not known	c.26cm	c.25cm	Not known	0.8cm

Parallels and Dating: Although there are no precise parallels for UGP.BW, evidence from al-Mataf suggests that the UGP tradition became prevalent during the 15th - 16th centuries, after which it is likely to have continued in circulation as the most common glazed ware in the region until at least as late as the 19th century (see MGP.3 and UGP.G1 above).

Origin: Southern Iran?

122. UGP.TTB (Two-Tone Black Underglaze Painted Ware)

Fabric No: N/A **Illustration:** Plate 139 **Number of Sherds:** 186

Kennet Class: UGP.TTB would be included within Kennet's generic UNDERGL class (see UGP.G1 above).

Basis of Grouping: Decorative style.

Defining Characteristics: Medium-sized, thick-walled bowls with heavy foot-rings, simple, gently everted or folded rims and obvious stacking marks on the interior. The interiors are covered with a transparent or green tinted glossy glaze with bold black underglaze-painted decoration. In most cases the glaze has completely worn away leaving only the black decoration standing slightly proud of the body. The bowls tend to be roughly finished giving the body a coarse appearance although actually the fabric is fine. The fabric displays some variation but generally it is fired to a light brown in the core (7.5YR 6/4) and a very pale brown in the margin (10YR 7/3-4). It has a hard sandy composition, a smooth fracture and a fine gritty feel. The only coarse elements are occasional mixed sandy grains and small infrequent voids.

Coherence: Very coherent and distinctive class, easily distinguishable from the other Underglaze Painted classes.

Decoration: Distinctive, broad black-lined motifs including most commonly a simple radial design comprised of six spokes emanating from the centre of the vessel which are joined by a band below the rim to form what looks like a cartwheel. Another common motif is a flower design. Closer to the rim the designs can become more complex and include lattice or scrolled in-fillings.

Form(s)	Description	Rim	Body	Base	H	W	D	T
UGP.TTB : 01	Medium sized open bowls	Simple, gently everted of folded	Open, mid-depth	Heavy crudely turned foot-ring	c.10 - 11cm	18 - 22cm	18 - 22cm	0.7 - 1cm

Parallels and Dating: Although there are no precise parallels for UGP.TTB, evidence from al-Mataf suggests that the UGP tradition became prevalent during the 15th - 16th centuries, after which it is likely to have continued in circulation as the most common glazed ware in the region until at least as late as the 19th century (see MGP.3 and UGP.G1 above).

Origin: Southern Iran?

123. UGP.GEN (General Unclassified Underglaze Painted Ware)

Fabric No: N/A **Illustration:** None **Number of Sherds:** 93

Kennet Class: UNDERGL.

Basis of Grouping: Decorative technique.

Defining Characteristics: Mostly medium to small-sized bowls on a wide range of different fabrics with different glaze colours and decorative schemes. All examples are part of the UGP tradition but so far cannot be assigned to any particular sub-class as each is represented by only a few sherds.

Coherence: All part of the same production tradition from many different independent productions.

Decoration: Various.

Parallels and Dating: Evidence from al-Mataf suggests that the UGP tradition became prevalent during the 15th - 16th centuries, after which it is likely to have continued in circulation as the most common glazed ware in the region until at least as late as the 19th century (see MGP.3 and UGP.G1 above).

Origin: Southern Iran?

124. YEMEN (Yemeni Yellow)

Fabric No: N/A **Illustration:** Plate 127 **Number of Sherds:** 15

Kennet Class: YEMEN.

Basis of Grouping: Glazing and decorative style.

Defining Characteristics: Open bowls with a simple or everted rim, flat base and relatively thick walls. The interior is covered with a bright yellow glaze that steps onto the rim exterior. The decoration is very simple consisting of a few strokes of brown, or more rarely green, arranged as loops that stretch from rim to rim. Most of the material is badly degraded and as a result the decoration tends to be faded and absent in some cases. The fabric tends to be a strong red with a blocky, slightly brittle structure.

Coherence: Coherent class.

Decoration: Loops of brown or green over a bright yellow glaze.

Parallels and Dating: Occurs at Kush from Phase E-10 but not at al-Mataf suggesting that the class only circulated during the 13th - early 14th century (Kennet, 2004: 41-2, table 3).

Origin: Yemen?

125. GREG.1-2 (Green Glazed Ware, Groups 1 & 2)

Fabric No: N/A **Illustration:** Plate 94

Kennet Class: The class is probably part of the continuation of the non-GRAF and non-ALK related green-glazed tradition represented in the al-Mataf sequence by certain types of TURQ and GMONO.2.

Basis of Grouping: Glaze colour.

Defining Characteristics: Assorted material on a fine, mostly red-coloured body with a monochrome green lead glaze, generally covering both the interior and exterior surfaces. Some pieces have a white underglaze slip (GREG.1) while on others the body is left plain (GREG.2). The glaze can be copper green, yellowish brown or light yellowish green and has a different quality to either the ALK or MONO.G traditions. The glaze is often badly weathered or misfired making identification more difficult.

GREG.1 – (26 Sherds) Version with a white underglaze slip.

GREG.2 – (153 Sherds) Non-slipped version or not possible to tell.

Coherence: Catch-all group comprised of a large number of individual classes and a wide range of different forms, glaze colours and fabric compositions. Despite this variation, all of the material clearly belongs to a similar post-GRAF green-glazed tradition.

Decoration: Mostly plain, though some have incised bands, rilling, wavy lines or appliqué elements.

Further Information: Unfortunately it is not possible to characterise the group more closely as the diversity is such that there are only a very few sherds representing any one production. A very large collection or a more controlled sample would be needed, before it would be possible to pick out individual classes.

Parallels and Dating: The class appears to be part of the non-GRAF related Green-Glazed Ware tradition that occurs from after the 10th century (see ALK.RC) and is represented at al-Mataf by certain types TURQ, which occur up to Phase III of the Mosque, and GMONO.2, which occurs from Phase III of the Mosque through the rest of the sequence (Kennet, 2004: 30, 44). GREG.1 may be dated earlier than GRAG.2 as white slip appears to go out of use during the 13th - 14th centuries with the demise of the Sgraffiato tradition (Kennet, pers. comm. 2002). This idea has however never actually been systematically tested.

Origin: Southern Iran?

126. KHUNJ (Khunj Ware)

Fabric No: N/A **Illustration:** Plate 124 **Number of Sherds:** 42

Kennet Class: KHUNJ.

Basis of Grouping: Fabric, glaze and form.

Defining Characteristics: The fabric is fine, extremely dense and well-levigated with a sub-conchoidal fracture and bears a strong resemblance to stoneware. Most pieces are fired to a light grey (2.5Y 6.5/1) or reddish yellow (5YR 6/6). Often both colours are represented on the same vessel, especially with predominantly reduced pieces, which often have distinctive red patches

of oxidisation on the surface that show up clearly through the glaze. The glaze tends to be quite thin and to range in colour from a deep bottle green through to light green, dark greenish-brown, orange-brown or dark brown. Those pieces that have a brown glaze tend to have a distinctive freckled appearance with darker dots in the glaze but these do not show up in the green versions of the glaze. The glaze tends to cover both the interior and exterior coming right down to the bottom of the foot and inside the well of the foot on bowls.

Coherence: Very consistent, readily discernable and distinctive features associated with the class.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
KU: 01	Small mid-depth bowls	Simple everted or with an internal recess	Open, mid-depth	Squared foot-ring with a faceted edge	c.9 - 10cm	16 - 18cm	16 - 18cm	0.5 - 0.8cm
KU: 02	Shallow dishes	Simple, thick and rounded or with an internal recess	Open, shallow profile	Flat or with a recessed foot-well	c.5 - 6cm	22 - 29cm	22 - 29cm	0.6 - 1cm
KU: 03	Jars	Rolled lip	Sloping shoulders, globular body, some with handles	Flat	c.25cm	c.20cm	Not known	0.7cm
KU: 04	Small lightly carinated bowls	Pointed, vertical lip	Gentle carination at mid-point	Not known	c.9cm	17cm	17cm	0.5cm

Parallels and Dating: A large stratified assemblage of the class has been recovered from the al-Mataf sequence from Phase III of the Mosque and Occupation areas continuing through the rest of the sequence (Kennet, 2004: 43, tables 7 & 8). KHUNJ probably went out of circulation before the 19th century as it did not occur in Trench 1 (Level IV) in Ras al-Khaimah, which has been dated to the 19th/20th centuries (Hansman, 1985: 17).

Origin: Southern Iran or Oman?

127. PERSIA.1-2 (Persian Blue Speckled Ware, Groups 1 & 2)

Fabric No: N/A

Kennet Class: PERSIA.1 is the same as PERSIA from al-Mataf and Hulaylah. PERSIA.2 does not appear to be represented in Kennet's classification.

Basis of Grouping: Glaze quality and forms.

Defining Characteristics: Two distinct fabric groups are represented within the class, a soft sandy textured dark red version (PERSIA.1) and a lighter buff version (PERSIA.2). The glaze is the most distinctive aspect of the class. The colour varies widely and includes deep bottle green, turquoise, deep cobalt blue and a light lilac purple. All colour variants are coarsely crazed and have a speckled effect, which appears as stippling in the surface or actual freckles of colour in the glaze. Most also have sandy inclusions in the fabric that sometimes break the glaze surface. The glaze tends to cover both the interior and exterior of jars, and interior and rim of bowls. Bowls also have pronounced stacking marks on the interior.

PERSIA.1 – (23 Sherds) This group, which is the more numerous of the two, is extremely homogenous. The fabric is yellowish-red in the core (5YR 5/6) and lighter pink in the margin (7.5YR 7/4). Inclusions in the fabric include rounded buff patches or voids (<0.5 - 1.5mm). These can be either infrequent or very frequent (1 - 35%) (see Plate 125).

PERSIA.2 – (16 Sherds) A rather more varied set of fabrics that range in colour from very pale brown (10YR 8/3) to heavily reduced dark grey (2.5Y 2.5/1). The fabric composition is also rather varied and includes both very fine fabrics and some that are much more coarse. This is clearly not a homogenous sub-class (see Plate 126).

Coherence: PERSIA as a whole is distinctive and generally coherent, but there are variations in fabric composition suggesting that there were a number of different production centres for the class.

Decoration: None.

Further Information: This does not appear to be a representative sample of PERSIA as the range of forms is limited and the number of sherds is low. Generally, this is a common class of pottery on the Arabian side of the Persian Gulf at sites such as Hulaylah and al-Mataf (Kennet, 2004: 42).

Form(s)	Description	Rim	Body	Base	H	W	D	T
PERS: 01	Flange rimmed bowls	Everted flange with a ridge along the angle, rounded lip	Open, mid-depth	Solid foot-ring with a conical well	c.6 - 10cm	20 - 30cm	20 - 30cm	0.6 - 1.1cm
PERS: 02	Thick walled jars	Simple, closed mouth, fattened internal collar	Rounded, unshouldered, one has a vertical strap handle		c.26 - 30cm	c.28 - 35cm	15cm	0.8 - 2cm

Parallels and Dating: The class occurs from Phase II - REC of the al-Mataf Mosque sequence dated to between the 14th - 17th centuries (Kennet, 2004: 42). There is no indication of any decrease in the frequency of the class towards the end of the sequence suggesting that it may have continued in circulation into the post al-Mataf period. The main form represented in the class is equivalent to Kennet Types 101 and 104 (Kennet, 2004: fig. 11). Types 101 and 104 appear to be variants of the same form.

Origin: Southern Iran?

128. REDYEL (Red & Yellow Ware)

Fabric No: 73 **Illustration:** Plate 128 **Number of Sherds:** 38

Kennet Class: REDYEL.

Basis of Grouping: Fabric, decorative technique and style.

Defining Characteristics: The class has a very fine, soft, white, slightly porous fabric which is covered with a clear glaze which appears bright yellow with a light black speckling over the exposed fabric. The vessels, which are all bowls, are also covered on the interior and/or exterior with a dark red slip, which has been cut through in champlevé style leaving bright yellow lines

sharply contrasted against the dark red background. A second version of the same class uses the same device but has a transparent, turquoise-tinted glaze that shows up bright turquoise against the body and black over the slip. Where one surface has been slipped and decorated, the other is generally left plain and appears either bright yellow or turquoise. The glaze has an even soft gloss without crazing and generally covers both the interior and exterior stopping just before the foot.

Integrity of Group: Coherent and very distinctive.

Decoration: Either short, closely-spaced cuts arranged in rows to produce a feathered effect or broad, loose flowing lines.

Form(s)	Description	Rim	Body	Base	H	W	D	T
REY: 01	Mid-depth open bowls	Straight, slightly everted or beaked	Open, mid-depth	Squared foot-ring or flat	c.6 - 10cm	14 - 24cm	14 - 24cm	0.3 - 1cm

Parallels and Dating: The class is absent from both the Kush and al-Mataf sequences indicating that it belongs to the post al-Mataf 17th - 20th century period (Kennet, 2004: 44).

Origin: Not known.

129. SPL.L (Late Splashed Glazed Ware)

Fabric No: 66 **Illustration:** Plate 111 **Number of Sherds:** 74

Kennet Class: None.

Basis of Grouping: Glaze colour and quality.

Defining Characteristics: Hard pink-bodied bowls covered over the interior and exterior with a thin, glossy, transparent greenish-yellow glaze and decorated with splashes of green or brown as well as more crisp lines of brown paint. Many of the vessels have a distinctive sharp angle at the interior of the interior floor. The angle between the wall and base on the exterior is often chamfered and the base itself has a rough uneven surface and is also glazed.

Coherence: Distinctive and coherent class.

Decoration: Extensive diffuse green and brown splashed zones combined with sharp brown trailed decoration applied with a brush.

Further Information: Bears some resemblance to the Splashed Glazed Ware tradition of the 9th century but the thin lifeless gloss of the glaze, the in-glaze colours, the forms and the fabric all indicate that this is a much later production.

Form(s)	Description	Rim	Body	Base	H	W	D	T
SPL.L: 01	Small open bowls	Simple, gently everted or folded	Open, mid-depth	Flat and uneven, squared foot-ring	c.4.5 - 9cm	12 - 25cm	12 - 25cm	0.35 - 0.9cm

Parallels and Dating: The class has not been noted at al-Mataf (Kennet, 2004) suggesting that it belongs to the 17th - 20th century period.

Origin: Southern Iran?

130. YSPEC (Monochrome Yellow Speckled Glazed Ware)

Fabric No: N/A **Illustration:** Plate 123 **Number of Sherds:** 38

Kennet Class: None.

Basis of Grouping: Glaze colour.

Defining Characteristics: Open bowls with a flat base and simple or everted rims. The interiors can be white slipped or unslipped with a thick speckled light straw yellow, light green or brown glaze that sometimes steps onto the rim exterior. The glaze has a lightly stippled surface that is enhanced by the glaze's tendency to puddle, as well as by small black flecks in the fabric. The fabric is fired to pink (5YR 7/4) and has a fine, grainy structure without voids but with a background of small sandy inclusions.

Coherence: Slightly disparate group of glazed wares within which there may be more than one actual class.

Decoration: None.

Further Information: The class bears some resemblance to both KHUNJ and MONO.Y, the latter both in terms of vessel forms, glaze cover and colour. The main difference is that YSPEC tends to display duller colours and the glaze is stippled and flecked rather than being fine and glossy. Next to one another the two classes are clearly distinct.

Form(s)	Description	Rim	Body	Base	H	W	D	T
YSP: 01	Simple straight rimmed bowls	Simple, straight rounded lip	Open, mid-depth	Flat pedestal	c.7cm	15cm	15cm	0.4cm
YSP: 02	Shallow dishes	Simple straight rounded lip	Open, shallow, slight step inside	Flat	c.4cm	18cm	18cm	0.7cm
YSP: 03	Flanged of everted rimmed bowls	Projecting flange or gently everted	Open, mid-depth	Flat pedestal	5 - 6cm	20 - 24cm	20 - 24m	0.6 - 0.7cm
YSP: 04	Small vertical sided bowls	Vertical rim, gently everted lip	Open, steep sides	Flat	c.5 - 6cm	14 - 18cm	14 - 18cm	0.5 - 0.6cm

Parallels and Dating: The class does not occur at al-Mataf (Kennet, 2004) and is therefore likely to be dated to the 17th - 20th century.

Origin: Southern Iran?

131. STO.EU (European Stoneware)

Fabric No: N/A **Illustration:** Plate 141 **Number of Sherds:** 3

Kennet Class: None.

Basis of Grouping: Fabric and form.

Defining Characteristics: Cylindrical stoneware ink bottles with either a simple fly-ash glaze producing a lustrous dark brown surface on one side of the vessel, or a bright shiny yellow/orange speckled salt-glaze. The first version is on a grey stoneware with fine (<0.5mm),

well-sorted black flecks (5%), while the second version is on a cream coloured porcelainous-stoneware body.

Coherence: Two distinct versions within the class.

Decoration: None apart from one example with a manufacturer's stamp impressed in the body.

Parallels and Dating: 17th - 19th century (spot dated, Sage 2002).

Origin: The grey bodied examples were probably manufactured in England while the light bodied example would have been produced somewhere within continental Europe, possibly the Iberian peninsula (Sage, pers. comm. 2002).

132. CHIN (China)

Fabric No: N/A **Illustration:** Plate 140 **Number of Sherds:** 9

Kennet Class: WILLOW would be included within CHIN but the former is more specific. Note that the class is not the same as CHIN in Kennet's classification.

Basis of Grouping: Fabric and decorative technique.

Defining Characteristics: Mould-made vessels manufactured with a hard white paste and either painted or transfer-printed with intricate patterns, mostly in cobalt blue and covered with a shiny transparent glaze.

Coherence: Coherent and distinctive manufacturing technique but produced in many different centres.

Decoration: Complex patterns often closely imitating those found on Chinese Blue and White Porcelain.

Parallels and Dating: 18th - 20th century (spot dated, Sage 2002).

Origin: Europe?

133. GT.1-5 (Glazed Tiles, Groups 1 - 5)

Fabric No: Various

Kennet Class: None.

Basis of Grouping: Object category.

Defining Characteristics: Press-moulded or cut glazed tiles in various shapes including oblong, thin strips, triangles and star shapes. The body composition appears to vary quite extensively though all are fine and compact or compact with a grainy structure and some fine sandy inclusions. The tiles all have a thick glaze covering the upper surface, mostly in monochrome colours.

GT.1 – (17 Pieces) Thick monochrome turquoise glaze with a glossy surface and heavy stippling. The shapes include large oblongs (10 - 17.5cm long x 6cm wide) or thin strips (8 - 10cm long x 2cm wide) often with bevelled sides (1.5 - 4cm thick) and a flat base (see Plate 142).

GT.2 – (22 Pieces) Very glossy monochrome cobalt blue glaze with faint, broad-grained stippling. The shapes include thin oblong strips (8.5 cm long x 2 cm wide) or triangles (6.5cm long x 5cm wide) with straight or bevelled sides (1.5 cm thick) and flat base often with charcoal flecked mortar still adhering to the back (see Plate 143).

GT.3 – (7 Pieces) Thick, opacified monochrome white glaze either with a finely stippled or smooth matt surface and broad crazing. Most of the tiles are triangles (6.5 cm long x 6 cm wide) with straight sides (1.5 cm thick) and a flat base with a rough charcoal flecked mortar still adhering to the back. Other one-off forms are also represented (see Plate 144).

GT.4 – (1 Piece) Opaque white glaze with ornate copper lustre floral decoration. The form is a thick rectangle with slightly bevelled sides (2.5 cm thick), though only the corner of one example is represented so the full dimensions are unknown (see Plate 145).

GT.5 – (1 Piece) Opaque white base glaze with cobalt blue and black decoration. The form is probably a star shape with strongly bevelled sides (1 cm thick). Only the corner of one example is represented so the full dimensions or shape are unknown (see Plate 146).

Coherence: Object category consistent, glaze quality, shape and fabric variable.

Parallels and Dating: Not known.

Origin: Southern Iran?

134. KD.1-4 (Kiln Debris, Groups 1 - 4)

Fabric No: N/A

Kennet Class: None.

Basis of Grouping: Object category.

Defining Characteristics: Assorted sub-classes of material associated with pottery manufacture.

KD.1 – (30 Pieces) Trivets or crow's-feet. Small, three-pointed 'star' shapes with down-turned spikes at the end of each points used as spacers for stacking glazed bowls or dishes during firing (see Plate 147).

KD.2 – (10 Pieces) Kiln bars. Straight or often curved bars that thin to a point at the end. Used for stacking glazed vessels during firing (see Plate 148).

KD.3 – (3 Pieces) Clinker. Vitrified residue that accumulates on the inside of kilns. Can be difficult to distinguish from the remains of glass production (see Plate 149).

KD.4 – (24 Pieces) Wasters that are disfigured to such an extent that they cannot be assigned to any particular class and cannot have been used or traded (see Plate 150).

Coherence: Coherent categories of material but different production origins.

Parallels and Dating: Not known.

Origin: Southern Iran?

135. GLAZ.DEG (Degraded Glazed Ware)

Fabric No: N/A **Illustration:** None **Number of Sherds:** 233

Kennet Class: UNCLASS-G.

Basis of Grouping: Condition of material.

Defining Characteristics: Assorted glazed pottery with patchy degraded surfaces or heavily weathered and discoloured glaze that cannot be identified or classified due to its poor condition.

Coherence: Disparate selection.

Decoration: Various.

Parallels and Dating: Not known.

Origin: Not known.

136. GLAZ.N-ID (Non-Identified Glazed Ware)

Fabric No: N/A **Illustration:** None **Number of Sherds:** 65

Kennet Class: UNIQG.

Basis of Grouping: Status of material.

Defining Characteristics: Assorted glazed ware sherds that cannot be allocated to any particular class. Mostly these are one-off pieces with well preserved surfaces for which no parallel could be found.

Coherence: Assorted sherds.

Decoration: Various.

Parallels and Dating: Not known.

Origin: Not known.

137. FRIT.BW (Blue and White Frit)

Fabric No: 58 **Illustration:** Plate 151 **Number of Sherds:** 767

Kennet Class: FRIT.BW.

Basis of Grouping: Fabric and decorative style.

Defining Characteristics: Frit-bodied bowls with thin or medium-thick walls and high ring bases. Most vessels have both the interior and exterior or the interior only decorated with cobalt blue, black or a combination of both over white under a transparent alkaline glaze. The glaze generally covers the whole of the vessel and appears shiny where preserved though often it

appears in a degraded condition. All of the sherds appear to fall within Kennet's later frit category (Kennet, 2004: 38) with complex underglaze decoration and forms associated with contemporary earthenware pottery.

Coherence: The whole class falls within a well-defined chronologically constrained tradition of production, however there are clearly many more sub-divisions within the class that could be made upon stylistic grounds or closer analysis of vessel forms.

Decoration: Complex and varied range of patterns and pictorial images which can appear sharp and detailed or diffuse. Many of the motifs mimic closely those found on CBW. Potentially the decoration may offer a key to the further sub-division of the class.

Further Information: The level and mode of glaze degradation appears to correspond in some cases with particular stylistic groups, this therefore appears to offer a further aspect that could help with the sub-division of the class.

This large a varied assemblage of FRIT.BW clearly merits a more detailed study in its own right. While there appears to be an extensive art historical literature on underglaze painted frits, there are few archaeological studied aimed purely at the dating of sherd material. Such a study would be of considerable assistance in dealing with later historical sherd assemblages, as the material appears to lend itself to detailed chronological sub-divisions.

Parallels and Dating: Evidence from the Kush/al-Mataf sequence suggests that later underglaze painted frits came into circulation from the 14th century (Kennet, 2004: 38).

Origin: Southern Iran?

138. FRIT.B (Monochrome Blue Glazed Frit)

Fabric No: 58 **Illustration:** Plate 152 **Number of Sherds:** 86

Kennet Class: An important distinction was made through the study of the frits in the Kush/al-Mataf sequence between early, predominantly monochrome frits, with thin walls and high foot rings, and later, predominantly underglaze-painted frits, with thicker walls and a wider range of forms. Frit in the Williamson Collection was sub-divided according to glaze colour, surface and form. As a result, some of the sub-classes contain both early and late frits, which can be differentiated by their form. Within the FRIT.B sub class, FMB: 01 is equivalent to FRIT.C. FMB: 02-04 are not represented in Kennet's classification. FRIT.B in the Williamson classification is not the same as FRIT.B in Kennet's system.

Basis of Grouping: Fabric and glaze colour.

Defining Characteristics: Frit-bodied bowls with a monochrome light sky-blue or dark cobalt-blue glaze. The vessels can be blue glazed on both the interior and exterior or have a clear white glazed interior or exterior. A few pieces have decoration incised into the body. The class includes both thin-walled early frit forms (FMB: 01) as well as later frit forms (FMB: 02-4).

Coherence: All monochrome blue glazed but includes a range of more specific decorative modes.

Decoration: Mostly plain monochrome glazed or blue and white combined, some pieces also have incised decoration cut into the body.

Further Information: Some of the pieces may originally have been decorated with lustre which has since degraded.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FMB: 01	Thin pointed rimmed bowls	Simple, thinning to a point	Steep straight flaring sides	Not known	c.8 - 10cm	12 - 16cm	12 - 16cm	0.25 - 0.5cm
FMB: 02	Small everted rimmed bowls	Gently everted, thinning lip	Open, mid depth	Foot-ring	c.4 - 6cm	12 - 16cm	12 - 16cm	0.4 - 0.5cm
FMB: 03	Small upright rimmed bowls	Simple, up-turned, gently squared	Open, shallow	Foot-ring	c.5cm	13 - 14cm	13 - 14cm	0.4cm
FMB: 04	Flanged rimmed dishes	Long projecting flange	Open, shallow profile	Foot-ring	c.5 - 6cm	20 - 22cm	20 - 22cm	0.35 - 0.5cm

Parallels and Dating: Form FMB: 01 probably belongs to the earlier frits dated to between the 11th - 13th centuries, while forms FMB: 02-04 appear to belong to the later frits dated to between the 14th - 20th centuries based on the distinction of earlier and later frits derived from the Kush/al-Mataf sequence (Kennet, 2004: 38).

Origin: Southern Iran?

139. FRIT.W (Monochrome White Frit)

Fabric No: 58 **Illustration:** Plate 153 **Number of Sherds:** 46

Kennet Class: This class is not the same as FRIT.W in Kennet's classification.

Basis of Grouping: Fabric and glaze colour.

Defining Characteristics: Frit-bodied pottery with a semi-translucent greenish white or solid opaque white alkaline-glaze. The latter variety often has pronounced crazing and looks similar to TIN.W1 or TIN.W2. Forms are mostly bowls within the same range as those occurring in other frit sub-classes. One heavy jar is also represented.

Coherence: Fairly well defined, though some more precise sub-division might be possible with a larger assemblage.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FMW: 01	Thin pointed rimmed bowls	Simple, thinning to a point	Steep straight flaring sides	Not known	c.8 - 10cm	12 - 16cm	12 - 16cm	0.25 - 0.5cm
FMW: 02	Small everted rimmed bowls	Gently everted, thinning lip	Open, mid depth	Foot-ring	c.4	10cm	10cm	0.2cm
FMW: 03	Simple curved profile bowls	Simple rounded	Open, mid depth with well curved profile	Foot-ring	c.7.5 - 9cm	20 - 29cm	20 - 29cm	0.4 - 0.5cm
FMW: 04	Large jar	Not known	Deep and broad at middle	Flaring foot-ring	c.43cm	c.30cm	Not known	1.2cm

Parallels and Dating: Form FMW: 01 probably belongs to the earlier frits dated to between the 11th - 13th centuries, while forms FMW: 02-04 appear to belong to the later frits dated to between the 14th - 20th centuries based on the distinction of earlier and later frits derived from the Kush/al-Mataf sequence (Kennet, 2004: 38).

Origin: Southern Iran?

140. FRIT.IW (Incised Monochrome White Frit)

Fabric No: 58 **Illustration:** Plate 154 **Number of Sherds:** 4

Kennet Class: None.

Basis of Grouping: Fabric and decorative technique.

Defining Characteristics: Frit-bodied bowls and dishes with a clear white or green-tinted alkaline-glaze covering the whole of the interior and exterior stopping just above the base with underglaze incised decoration cut directly into the body. The glaze tends to be well fitted and glossy, despite being heavily crazed.

Coherence: The sherd sample for this class is small and each piece appears rather different, though they all share the same basic attributes.

Decoration: Loose scrawling designs similar in style to motifs occurring on Sgraffiato. One dish has a thin trail of blue running from the rim into the centre of the vessel.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FIMW: 01	Small dishes	Flanged or vertically folded	Open shallow	Low ring base	3.8cm	15 - 21cm	15 - 21cm	0.4 - 0.5cm

Parallels and Dating: Incised decoration does not appear to be a feature associated with the early frits, the group may therefore belong to the later frits dated any time to between the 14th - 20th centuries on the basis of the Kush/al-Mataf sequence (Kennet, 2004: 38).

Origin: Southern Iran?

141. FRIT.MW (Moulded Monochrome White Frit)

Fabric No: 58 **Illustration:** Plate 155 **Number of Sherds:** 5

Kennet Class: None.

Basis of Grouping: Fabric and decorative technique.

Defining Characteristics: Frit-bodied jars with a degraded, opaque monochrome, white glaze and large zones of raised stipples arranged in rows across the body.

Coherence: Coherent sub-class.

Decoration: Stippled exterior surfaces.

Parallels and Dating: Moulded decoration does not appear to be a feature associated with the early frits, the group may therefore belong to the later frits dated any time to between the 14th - 20th centuries on the basis of the Kush/al-Mataf sequence (Kennet, 2004: 38).

Origin: Southern Iran?

142. FRIT.G (Monochrome Green Frit)

Fabric No: 58 **Illustration:** Plate 156 **Number of Sherds:** 7

Kennet Class: None.

Basis of Grouping: Fabric and glaze colour.

Defining Characteristics: Frit-bodied bowls with a thick, opaque, well-fitted, light-green alkaline-glaze closely resembling, and probably designed to imitate LQC. The glaze covers both the interior and exterior, usually stopping before the base.

Coherence: The sherd sample for this class is small and each piece appears to belong to a different form, however the glazing is consistent.

Decoration: One vessel has heavy vertical fluting on the exterior in direct imitation of the Longquan celadon, other pieces are plain.

Parallels and Dating: The class appears to belong to the later frits dated any time to between the 14th - 20th centuries on the basis of the Kush/al-Mataf sequence (Kennet, 2004: 38).

Origin: Southern Iran?

143. FRIT.P (Monochrome Purple Frit)

Fabric No: 58 **Illustration:** Plate 157 **Number of Sherds:** 13

Kennet Class: None.

Basis of Grouping: Fabric and glaze colour.

Defining Characteristics: Frit-bodied bowls, mostly thin, straight walls, with a semi-translucent deep purple alkaline-glaze covering the interior and stopping 1.5 – 2cm below the rim exterior or covering the whole of the interior and exterior. The glaze tends to be thick and shiny with heavy crazing and has a tendency to degrade, flaking away from the body. Where the glaze is preserved, it tends to have a white iridescence surface.

Coherence: Coherent sub-class.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FMP: 01	Thin pointed rimmed bowls	Simple, thinning to a point	Steep straight flaring sides	Not known	10cm	15cm	15cm	0.4cm
FMP: 02	Small everted rimmed bowls	Short sharply everted lip	Shallow with upright walls close to rim	Not known	c.5cm	14cm	14cm	0.45cm

Parallels and Dating: The whole class probably belongs to the earlier frits dated to between the 11th - 13th centuries based on the Kush/al-Mataf sequence (Kennet, 2004: 38).

Origin: Southern Iran?

144. FRIT.GW (Green & White Decorated Frit)

Fabric No: 58 **Illustration:** Plate 158 **Number of Sherds:** 8

Kennet Class: None.

Basis of Grouping: Fabric and decorative style.

Defining Characteristics: Frit-bodied vessels with an opaque, light-green alkaline-glaze covering the interior and exterior overlaid on the interior or exterior with fine, opaque white decoration. The glaze has a 'dry' matt surface and has a tendency to peal away in flakes.

Coherence: Small sample and each piece is rather different but the colour and decorative technique are consistent.

Decoration: Reasonably well defined areas of crisp white decoration including spirals, concentric rings, flowers or free flowing trailing. The decoration contrasts strongly with the green background. On one sherd the white decoration is bordered with black.

Further Information: There are no diagnostic bowl sherds in the assemblage although bowls forms are represented.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FGW: 01	Small closed bottle	Simple rounded & up-turned	Strong carination at middle	Not known	Not known	7cm	2.5cm	0.4 - 0.5cm

Parallels and Dating: The class belongs to underglaze-painted frits, which are part of the later frit tradition dated to the 14th - 20th centuries based on the Kush/al-Mataf sequence (Kennet, 2004: 38).

Origin: Southern Iran?

145. FRIT.EI (Enamel Imitation Frit)

Fabric No: 58 **Illustration:** Plates 159 & 160 **Number of Sherds:** 2

Kennet Class: None.

Basis of Grouping: Fabric and decorative style.

Defining Characteristics: Straight-sided, thin-walled, frit-bodied bowls with brightly coloured decoration over a thick, glossy, well-fitted, white glaze coving both the interior and exterior in close imitation of enamelled porcelain from East Asia.

Coherence: Coherent sub-class.

Decoration: Bright-red lined decoration on the interior. On the exterior a coloured band combined with a diffuse pink criss-crossing motif. The interior decoration bears a much closer resemblance to ENAM than the exterior.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FEI: 01	Thin pointed rimmed bowls	Simple, thinning to a point	Steep straight flaring sides	Not known	c.8cm	12cm	12cm	0.4 - 0.5cm

Parallels and Dating: The class must be dated to the same period or later as the ENAM that it imitates (e.g. from the 18th - 19th century) (Kennet, 2004: 52).

Origin: Southern Iran?

146. FRIT.T (Monochrome Turquoise Frit)

Fabric No: 58 **Illustration:** Plate 162 **Number of Sherds:** 136

Kennet Class: Only FMT: 01 is equivalent to FRIT.T in Kennet's classification; all of the other forms belong to the later frit tradition (see FRIT.B above).

Basis of Grouping: Fabric and glaze colour.

Defining Characteristics: Frit-bodied vessels with an opaque or semi-translucent, bright, monochrome turquoise glaze covering both the interior and exterior and usually stopping before the base. Where the glaze is well preserved it appears glossy, the glaze is often degraded and has a tendency to flake, abrade or turn white with iridescence.

Coherence: Wide range of forms but coherent style.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FMT: 01	Thin straight sided pointed rimmed bowls	Simple, thinning to a point	Steep straight flaring sides	High straight or flaring foot-ring	c.7 - 10cm	16 - 20cm	16 - 20cm	0.15 - 0.5cm
FMT: 02	Small simple rimmed bowls	Simple rounded	Open, mid-depth	Short squared foot-ring	c.5 - 7cm	14 - 18cm	14 - 18cm	0.3 - 0.5cm
FMT: 03	Gently everted & pointed rimmed bowls	Gently everted & thinning to a point	Open, mid-depth	Foot-ring	c.5 - 7.5cm	10 - 14cm	10 - 14cm	0.35 - 0.5cm
FMT: 04	Sharply everted rimmed bowls	Sharply everted flange or fattened	Open, mid-depth	Foot-ring	c.8cm	18 - 20cm	18 - 20cm	0.3 - 0.5cm
FMT: 05	'T' form rimmed bowls	Projecting interior & exterior flange	Steep sided, deep, half-closed	Foot-ring	c.10cm	24cm	24cm	0.45cm
FMT: 06	Inverted rimmed bowls	Gently or strongly inverted lip	Open, mid-depth to shallow	Foot-ring	c.4 - 6cm	14 - 16cm	14 - 16cm	0.3 - 0.6cm
FMT: 07	Flanged rimmed dishes	Long projecting flange	Open, shallow profile	Foot-ring	c.6 - 7cm	26 - 32cm	26 - 32cm	0.4 - 0.6cm
FMT: 08	Carinated dishes	Long flaring flange, pointed lip	Open with a low carination	Foot-ring	c.5cm	c.20cm	c.20cm	0.4cm
FMT: 09	Flanged & up-turned rimmed dishes	Flanged with an up-turned lip	Open, shallow profile	Foot-ring	c.6cm	28cm	28cm	0.5 - 0.7cm
FMT: 10	Various jars	Various	Closed, some shouldered	Some with foot-ring	c.20cm	c.17cm	14cm	0.3 - 0.7cm

Parallels and Dating: Form FMT: 01 probably belongs to the earlier frits dated to between the 11th - 13th centuries, while forms FMB: 02-10 appear to belong to the later frits dated to between the 14th - 20th centuries based on the distinction of earlier and later frits in the Kush/al-Mataf sequence (Kennet, 2004: 38).

Origin: Southern Iran?

147. FRIT.IT (Incised Monochrome Turquoise Frit)

Fabric No: 58 **Illustration:** Plate 163 **Number of Sherds:** 41

Kennet Class: None.

Basis of Grouping: Fabric and decorative technique.

Defining Characteristics: Frit-bodied bowls with a bright, semi-translucent, monochrome, turquoise alkaline-glaze coving both the interior and exterior stopping before the base. Interiors are also decorated with incised lines cut into the body that show up darker where the glaze has puddled. The glaze has a tendency to degrade or flake.

Coherence: Coherent sub-class.

Decoration: Lines incised into the body that are widely spaced and often in paired, parallel bands or more complex free-flowing lines and scrolls, similar in style to Sgraffiato.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FIMT: 01	Simple straight rimmed bowls	Simple, thinning slightly	Open, straight flaring sides, mid-depth	Foot-ring	c.9 - 11cm	20 - 26cm	20 - 26cm	0.4 - 0.6cm
FIMT: 02	Flanged rimmed dishes	Flanged	Open, shallow profile	Foot-ring	c.8 - 10cm	22 - 28cm	22 - 28cm	0.5 - 0.6cm
FIMT: 03	Everted rimmed bowls	Sharply everted, simple or fattened	Open, mid-depth	Foot-ring	c.8cm	18cm	18cm	0.35 - 0.4cm
FIMT: 04	Flanged rimmed dishes with up-tuned lips	Flanged with an up-turned lip	Open, shallow profile	Foot-ring	c.8cm	26cm	26cm	0.5cm

Parallels and Dating: Incised decoration does not appear to be a feature associated with the early frits, the group may therefore belong to the later frits dated any time to between the 14th - 20th centuries on the basis of the Kush/al-Mataf sequence (Kennet, 2004: 38).

Origin: Southern Iran?

148. FRIT.MT (Moulded Monochrome Turquoise Frit)

Fabric No: 58 **Illustration:** Plate 164 **Number of Sherds:** 37

Kennet Class: None.

Basis of Grouping: Fabric and decorative technique.

Defining Characteristics: Moulded frit-bodied jars and bowls with elaborate relief decoration covered on the interior and exterior with a bright, semi-transparent, monochrome turquoise glaze that stops before the base. The glaze appears darker where it puddles in the recesses of the decoration and lighter on points of protrusion, producing a two-tone effect that emphasis the decoration.

Coherence: Coherent sub-class.

Decoration: Mostly heavily-moulded, floral designs.

Further Information: Two green-glazed examples have been included within the class. With a larger sample this might form a further sub-class in its own right.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FMMT: 01	Simple straight sided bowls	Simple, thinning	Open, straight flaring sides	Not known	c.9 - 11cm	20 - 26cm	20 - 26cm	0.4 - 0.6cm
FMMT: 02	Fattened barb rimmed bowl	Fattened with a small external lip	Straight upper wall, half-closed	Not known	c.9cm	20cm	20cm	0.5cm
FMMT: 03	Closed jars	Not known	Rounded, sloping shoulders, some with handles	Not known	Not known	c.14 - 23cm	Not known	0.4 - 0.7cm

Parallels and Dating: Moulded decoration does not appear to be a feature associated with the early frits, the group may therefore belong to the later frits dated any time to between the 14th - 20th centuries on the basis of the Kush/al-Mataf sequence (Kennet, 2004: 38).

Origin: Southern Iran?

149. FRIT.TB (Turquoise & Black Painted Frit)

Fabric No: 58, 59 **Illustration:** Plate 165 **Number of Sherds:** 96

Kennet Class: FRIT.TB.

Basis of Grouping: Fabric and decorative style.

Defining Characteristics: Frit-bodied vessels decorated with detailed, crisp, black decoration under a bright turquoise glaze covering the interior and exterior, stopping just above the base. The turquoise glaze is either semi-translucent or opaque and has a tendency to degrade sometimes leaving only the black decoration still adhering. Most of the vessels are open bowls. Various specific types are represented, the most common is a simple bowl with a gently everted lip.

Coherence: Coherent sub-class.

Decoration: A wide range of complex motifs similar in style to FRIT.BW or the UGPs, especially MGP.1, UGP.G2, UGP.C1 and UFP.F1. The ornamentation tends to be most rich on the interior of bowls, although exteriors can also have some decoration.

Further Information: There are two fabric groups represented in the class, a fine-grained, usually white coloured glassy frit (Fabric 58) and a coarser-grained crumbly yellow frit with large quartz inclusions and a more clayey looking matrix (Fabric 59). Potentially it would be possible to sub-divide the class based on this distinction, although sometimes it would be

difficult to distinguish the two. It should be noted that forms FTB: 01-02 occur in both fabrics while FTB: 03-04 occurs only in Fabric 59 and FTB: 05-06 only in Fabric 58.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FTB: 01	Simple bowls with a gently everted lip	Simple with an out-turned lip	Open, mid depth	Slightly flaring foot-ring	6.5 - 8.5cm	13 - 17cm	13 - 17cm	0.4 - 0.5cm
FTB: 02	Simple straight rimmed bowls	Simple rounded	Open, mid-depth	Short squared foot-ring	c.5 - 9cm	14 - 22cm	14 - 22cm	0.3 - 0.7cm
FTB: 03	Flanged rimmed dishes	Long projecting flange	Open, shallow profile	Foot-ring	c.6 - 7cm	26 - 32cm	26 - 32cm	0.4 - 0.6cm
FTB: 04	Shallow vertical rimmed bowls	Simple thinning up-turned rim	Open, shallow	Foot-ring	c.5cm	22cm	22cm	0.5 - 0.8cm
FTB: 05	Deep 'T' form rimmed bowls	Flat topped with internal & external flange	Open with upright flaring sides	Foot-ring	c.11cm	17cm	17cm	0.6cm
FTB: 06	Flange rimmed jars	Inverted or everted flange or both	Closed with no shoulders	Not known	c.13 - 14cm	9 - 14cm	9 - 15cm	0.3 - 0.5cm

Parallels and Dating: The class belongs to the later underglaze painted frits that were produced between the 14th - 20th centuries, based on the Kush/al-Mataf sequence (Kennet, 2004: 38). Identical pottery has been recovered from Period 3 levels at Tepe Dasht-i Deh dated to the 14th century (Williamson, 1971e: 183) indicating that the class may belong to the earlier part of the time range given for underglaze-painted frits.

Origin: Southern Iran?

150. FRIT.TBU (Turquoise & Blue Painted Frit)

Fabric No: 58 **Illustration:** Plate 161 **Number of Sherds:** 4

Kennet Class: None.

Basis of Grouping: Fabric and decorative style.

Defining Characteristics: Frit-bodied vessels displaying very similar characteristics to FRIT.TB except the underglaze decoration is in cobalt blue instead of black. The glaze remains bright turquoise and covers both the interior and exterior, stopping before the base. There are no diagnostic sherds represented in this class.

Coherence: Coherent, although very small sample.

Decoration: Elaborate, well-defined decoration on the interior and exterior similar in style to FRIT.TB.

Parallels and Dating: Probably dated to the same period as FRIT.TB (see above) and certainly to the same period as the later underglaze-painted frits (Kennet, 2004: 38).

Origin: Southern Iran?

151. FRIT.BL (Monochrome Blue Lustre Frit)

Fabric No: 58 **Illustration:** Plate 166 **Number of Sherds:** 21

Kennet Class: None.

Basis of Grouping: Fabric, decorative technique and style.

Defining Characteristics: Fine, generally thin-walled, frit-bodied vessels, with a glossy dark cobalt-blue glaze covering the interior and exterior stopping before the foot. Interior and exterior glaze surfaces are over-painted with dark gold lustre ornamentation.

Coherence: Coherent sub-class.

Decoration: Panels of fine ornamentation accompanied by horizontal strips of calligraphic text. Exteriors are generally plainer but are decorated. Rims are usually marked with a band of gold lustre. Large blank zones are often left between elements of decoration.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FMBL: 01	Simple straight sided bowls	Simple thinning to a point	Open, straight flaring sides, mid depth	Low foot-ring	c.6 - 7cm	16 - 18cm	16 - 18cm	0.2 - 0.4cm
FMBL: 02	Closed forms	Not known	Not known	Not known	Not known	Not known	Not known	0.3 - 0.8cm

Parallels and Dating: Lustre frit is thought to have been introduced to Iran in the second half of the 12th century and to have gone out of production by the time of the Mongol invasion in the 13th century (Watson, 1985: 23-4). At Kush lustre frit occurs only in Phases E-10 to E-11 dated to the 13th/14th centuries (Kennet, 2004: 39, table 3).

Origin: Southern Iran?

152. FRIT.L (Lustre Frit)

Fabric No: 58 **Illustration:** Plate 167 **Number of Sherds:** 43

Kennet Class: FRIT.L.

Basis of Grouping: Fabric, decorative technique and style.

Defining Characteristics: Frit-bodied jars and bowls with a clear, white glaze and zones or splashes of cobalt blue over-painted with gold lustre on the interior and exterior with the glaze stopping before the foot. The glaze tends to have an opaque appearance and a glossy surface where it is well preserved although it has a tendency to degrade with the surface becoming dull. Some pieces have only lustre on white, but most also have blue.

Coherence: Coherent sub-class.

Decoration: Complex lustre ornamentation including calligraphic script arranged in registers between bands, often with a thick band following the rim. Exteriors of bowls are usually plain or simply decorated.

Form(s)	Description	Rim	Body	Base	H	W	D	T
FL: 01	Simple rimmed bowls	Straight, slightly thinning	Open, mid-depth	Straight or flaring foot-ring	c.5 - 10cm	11 - 28cm	11 - 28cm	0.3 - 0.5cm
FL: 02	Everted rimmed bowls	Gently everted, thinning lip	Open, mid depth	Foot-ring	c.6cm	14cm	14cm	0.4cm
FL: 03	Tall straight sided bowl/beakers	Simple thinning to a point	Straight flaring sides	Not known	c.9cm	8cm	8cm	0.3cm
FL: 04	Flange rimmed dishes	Long everted flange	Open, shallow profile	Foot-ring	c.6cm	26cm	26cm	0.5cm
FL: 05	Jars	Not known	Well defined shoulders, globular body	Tall flaring foot-ring	c.25cm	c.19cm	Not known	0.4 - 0.6cm

Parallels and Dating: Lustre frit is thought to have been introduced to Iran in the second half of the 12th century and to have gone out of production by the time of the Mongol invasion in the 13th century (Watson, 1985: 23-4). At Kush lustre frit occurs only in Phases E-10 to E-11 dated to the 13th/14th centuries (Kennet, 2004: 39, table 3).

Origin: Southern Iran?

153. FRIT.DEG (Degraded and Non-Identified Frit)

Fabric No: 58 **Illustration:** None **Number of Sherds:** 44

Kennet Class: FRIT.DEG.

Basis of Grouping: Fabric and condition.

Defining Characteristics: Frit-bodied vessels that are either too degraded to assign to classify or which have a glaze or decorative scheme that is unique within the Collection.

Coherence: Assorted material.

Decoration: Various decoration, glaze mostly covers the interior and exterior.

Parallels and Dating: The material could be dated any time within the full range of frits in Iran as defined by the Kush/al-Mataf sequence (e.g. 12th - 20th century) (Kennet, 2004: 38).

Origin: Southern Iran?

154. WWSL (Slipped White Ware)

Fabric No: 80 **Illustration:** Plate 203 **Number of Sherds:** 12

Kennet Class: None.

Basis of Grouping: Fabric, glaze and vessel form.

Defining Characteristics: Thick-walled, medium-sized bowls with gently everted rims, vertical ridges on the interior and a broad, squared foot-ring. The glaze, which is applied as a slip glaze, appears thick and opaque and is a light cream colour with no crazing or very fine crazing and a soft, even gloss. The body is a dense, slightly gritty, 'dry-looking', white stoneware.

Coherence: Distinctive and coherent class.

Decoration: None except for the raised ridges on the interior.

Form(s)	Description	Rim	Body	Base	H	W	D	T
WWSL: 01	Medium sized bowls	Gently everted	Open, mid-depth, ridged interior	Wide squared foot-ring	c.6 - 7.5cm	20 - 27cm	20 - 27cm	0.5 - 0.7cm

Parallels and Dating: Late Tang or early Song period (9^{th}?) 10^{th} century (spot dated, Krahl 04/09/2003).

Origin: Southern China.

155. WWS.1-10 (Southern White Ware, Groups 1 - 10)

Fabric No: 75

Kennet Class: None.

Basis of Grouping: Production place.

Defining Characteristics: Various fine white wares with a clear glaze on a pure white porcelain body.

WWS.1 – (11 Sherds) Small bowls with simple, gently everted or tightly-folded rims, on a pure bright white body, with a 'dry' appearance and a thick opaque glaze, with a soft even sheen. May have been manufactured in Guangdong. Belongs to the Song period, 10^{th} - 11^{th} century (see Plate 204).

WWS.2 – (7 Sherds) Small bowls with folded rims, on a pure white body, with a 'dry' appearance and a white glaze with a slight green tinge. The glaze on WWS.2 is not as bright white as WWS.1 and this sub-class is also more consistent. May have been manufactured in Guangdong. Belongs to the Song period, 10^{th} - 11^{th} century (see Plate 205).

WWS.3 – (3 Sherds) Small bowls with a folded rim, on a fine, glassy-white body, with a thin, slightly glossy, off-white, green-tinted glaze. Probably manufactured in Guangdong. Belongs to the Song period, 10^{th} - 11^{th} century (see Plate 206).

WWS.4 – (32 Sherds) Generic category for small to medium-sized bowls, with gently everted rims and squared or pointed foot-rings or flat bases and a pure-white glaze. Manufactured in southeast China between the 10^{th} - 12^{th} centuries (see Plate 207).

WWS.5 – (2 Sherds) Large, open or closed vessels, on a 'dry' looking, slightly coarse white body, with a thick, opaque white glaze. Manufactured in southeast China between the 10^{th} - 12^{th} centuries (see Plate 208).

WWS.6 – (6 Sherds) Medium sized, relatively thick-walled bowls, with gently everted or butted rims, with a thick, creamy, off-white glaze that appears similar to WWSL except that the body is slightly finer. Manufactured in southeast China between the 10^{th} - 12^{th} centuries (see Plate 209).

WWS.7 – (12 Sherds) Generic category of medium-sized open bowls, with grey to greenish grey glazes (that sometimes stop before the base), on various, mostly slightly

coarse, 'dry-looking', porcelain bodies. Manufactured in southeast China or possibly southeast Asia between the 10th - 12th centuries (see Plate 210).

WWS.8 – (4 Sherds) Fluted and lobed-rimmed cups and dishes on a fine, glassy-white body, with a pure, frosty-white glaze. Manufactured in southeast China between the 10th - 12th centuries (see Plate 211).

WWS.9 – (7 Sherds) One-offs and degraded white wares that can never-the-less be identified as having been manufactured in southeast China between the 10th - 12th centuries (no illustration).

WWS.10 – (23 Sherds) Small, square-cut and unglazed rimmed bowls that are very similar and difficult to distinguish from DEH.1. The main difference is the fabric which tends to be much harder and glassier. The glaze also has a strong sheen not seen on DEH.1. Most of the vessels are plain but a few have intricate incised, or incised and inlayed, decoration. The glaze ranges in colour from pure white to a greenish-grey tinged. Manufactured in south China between the 12th - 13th centuries (see Plate 212).

Coherence: Some of the groups represent well-defined recognisable classes, while others contain material with only a very general association.

Decoration: Mostly plain, see individual entries.

Form(s)	Description	Rim	Body	Base	H	W	D	T
WWS.1: 01	Small open bowls	Simple, everted or folded	Open, mid-depth	Squared foot-ring	Not known	14 - 16cm	14 - 16cm	0.25 - 0.4cm
WWS.2: 01	Small open bowls	Tight or long exterior fold	Open, mid depth	Not known	Not known	15 - 18cm	15 - 18cm	0.25 - 0.4cm
WWS.3: 01	Small open bowls	Long exterior fold	Open, mid-depth	Not known	Not known	18 - 20cm	18 - 20cm	0.25 - 0.35cm
WWS.4: 01	Small to medium sized open bowls	Gently everted	Open, mid-depth	Squared/ pointed foot-ring or flat	Not known	14 - 22cm	14 - 22cm	0.3 - 0.5cm
WWS.5: 00	Closed & open forms	Not known	Closed or open	Not known	Not known	Not known	Not known	0.6 - 0.9cm
WWS.6: 01	Medium sized open bowls	Gently everted or butted	Open, mid-depth	Not known	Not known	21 - 26cm	21 - 26cm	0.4 - 0.6cm
WWS.7: 01	Medium sized open bowls	Simple or gently everted	Open, mid-depth	Tall squared foot-ring	Not known	20 - 28cm	20 - 28cm	0.25 - 0.6cm
WWS.8: 01	Cups & dishes	Lobed	Open, mid-depth or shallow, fluted walls	Squared or pointed foot-ring	Not known	9 - 20cm	9 - 20cm	0.2 - 0.4cm
WWS.9: 00	Mixed category	Various	Various	Various	N/A	N/A	N/A	N/A
WWS.10: 01	Small to medium sized open bowls	Square cut and unglazed	Open, mid-depth	Glaze stops before base	Not known	16 - 20cm	16 - 20cm	0.3 - 0.4cm

Parallels and Dating: All classes are dated to between the 10th - 13th centuries, see individual entries (spot dated, Krahl 04/09/2003).

Origin: The specific place of production for all of the WWS groups is not known, although all appear to be from southern China.

156. WWF (Fujjien White Ware)

Fabric No: 79 **Illustration:** Plate 213 **Number of Sherds:** 4

Kennet Class: None.

Basis of Grouping: Production place.

Defining Characteristics: Sugary, white porcelain body with a thin, very light, yellowish-green tinted, clear, glassy, finely-crazed glaze which has a tendency to peal away in flakes. The form is restricted to a single type, which is a small cup with a gently everted rim. The exteriors tend to have fine throwing rings still visible on the surface while the interior are smooth.

Coherence: Coherent and distinctive class.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
WWF: 01	Small cups	Gently everted rim	Open, mid-depth	Not known	Not known	10cm	10cm	0.3cm

Parallels and Dating: Dated to between the 10th - 12th centuries (spot dated, Krahl 04/09/2003).

Origin: Manufactured in Fujien or possibly Dehua.

157. WWG.1-3 (Guangdong White Ware, Groups 1 - 3)

Fabric No: 75, 77

Kennet Class: The following classes may be directly associated: WWG.1 and GWW; WWG.2 and CWW; WWG.3 and GGW. Although Kennet's sub-division of Guangdong Green Wares was also devised together with Krahl (Kennet, 2004: 47-8), it is not clear if the same criteria were applied in both schemes of classification and no attempt was made at the time to formerly link the systems.

Basis of Grouping: Production place.

Defining Characteristics:

WWG.1 – (9 Sherds) Slightly heavy bowls with a very hard, white porcelain body (Fabric 75) and a glassy-white to off-white, green-tinted glaze, which has a tendency to puddle, often over fine carved or combed decoration. Manufactured in Guangdong probably in the 11th century (see Plate 214).

WWG.2 – (5 Sherds) Thin-walled bowls with a very hard white porcelain body (Fabric 75) covered with a glossy-white or grey glaze. The exteriors are decorated with carved flutings representing a crude lotus petal design. The class is commonly referred to as 'Carved White Ware'. Manufactured possibly in Guangdong during the 11th - 13th centuries (see Plate 215).

WWG.3 – (1 Sherd) Thick-walled bowls on a hard, yellowish-grey fabric (Fabric 77) with carved lotus petals on the exterior and a light yellowish-green tinted glaze. Manufactured in Guangdong. Date unknown (see Plate 216).

Coherence: Reasonably coherent groups, though the level of variation within each suggests that further sub-divisions could readily be made with a larger assemblage.

Decoration: Mostly with carved decoration, see individual descriptions.

Form(s)	Description	Rim	Body	Base	H	W	D	T
WWG.1	Open bowls	Not known	Not known	Thin or squared foot-ring	Not known	Not known	Foot ring 6 - 7cm	0.35 - 0.7cm
WWG.2	Carved lotus bowls	Simple, pointed	Open, mid-depth	Not known	Not known	18 - 20cm	18 - 20cm	0.3 - 0.6cm
WWG.3	Medium sized lotus bowls	Not known	Open, mid-depth	Not known	Not known	Not known	Not known	0.7 - 0.8cm

Parallels and Dating: All groups that have been dated are from the 11th - 13th centuries, though see individual entries above (spot dated, Krahl 04/09/2003).

Origin: Guangdong.

158. WWJ.1-4 (Jingdezhen White Ware, Groups 1 - 4)

Fabric No: 75

Kennet Class: None.

Basis of Grouping: Production place.

Defining Characteristics:

WWJ.1 – (1 Sherd) Heavy, thick-walled bowls on a pure-white porcelain body with a thick, opaque-looking, egg-shell blue glaze. Dated to the 14th century (see Plate 221).

WWJ.2 – (1 Sherd) Heavy, thick-walled bowl form on a coarser porcelain body than WWJ.1, covered with a heavily crazed, opaque, white glaze. Dated to the 14th century (see Plate 222).

WWJ.3 – (2 Sherds) Thin-walled vessels with rather variable fabric, intricate motifs carved on the exterior and a shiny, pure white glaze. Dated to the 16th century (see Plate 223).

WWJ.4 – (2 Sherds) Distinctive, medium-sized bowls with a pure-white porcelain body with frequent (5%), small (<0.5mm), sub-rounded, well-sorted black flecks. Both the interiors and exterior surfaces are covered with a bright yellow and fine black-flecked glaze that stops at the bottom of the foot-ring. The inside of the foot-ring has a plain white glaze. Dated not earlier than the 17th century (see Plate 224).

Coherence: Each of the WWJ sub-classes is very different. In addition, there are too few sherds in each of the sub-classes to determine how consistent they actually are. WWJ.3 appears rather variable. WWJ.4 is coherent and very distinctive.

Decoration: Mostly plain except for WWJ.3 with finely incise decoration.

Form(s)	Description	Rim	Body	Base	H	W	D	T
WWJ.1: 01	Heavy bowls	Not known	Not known	Not known	Not known	Not known	Not known	1.1cm
WWJ.2: 01	Heavy bowls	Not known	Not known	Tall squared foot-ring	Not known	Not known	Foot ring 5cm	1cm
WWJ.3: 01	Thin walled bowls	Not known	Not known	Not known	Not known	Not known	Not known	0.3cm
WWJ.4: 01	Medium sized open bowls	Not known	Open, shallow profile	Pointed foot-ring	Not known	Not known	Foot-ring 14cm	0.4 - 0.7cm

Parallels and Dating: See individual entries above (spot dated, Krahl 04/09/2003).

Origin: Jingdezhen.

159. WW.0-5 (General White Ware, Groups 0 - 5)

Fabric No: 75

Kennet Class: WW.0 is equivalent to Kennet's non-identified White Ware class WHT. WW.1-5 have no exact parallels in Kennet's classification.

Basis of Grouping: Glaze and fabric.

Defining Characteristics: Generic category of Chinese white wares with a clear glaze on a fine, white, porcelain body that cannot be identified with a specific production place.

WW.0 – (8 Sherds) Non-identified white wares. Not dated (not illustrated).

WW.1 – (1 Sherd) Open bowls with a pure, glassy-white body and a shiny, transparent glaze. Dated to between the 14th - 15th centuries (see Plate 225).

WW.2 – (1 Sherd) Large, open bowls with a 'dry', grey, gritty body and a thick, opaque, off-white grey, smoked-glaze with heavy crazing. Dated to between the 16th - 17th centuries (see Plate 226).

WW.3 – (14 Sherds) Small, thin-walled, everted-rimmed bowls with a very fine, glassy-white porcelain body and a light, eggshell-blue glaze with a glossy surface. Dated to between the 16th - 17th centuries (see Plate 227).

WW.4 – (4 Sherds) Medium-sized bowls that are similar to WW.3 except that the glaze is a stronger, more uniform, eggshell-blue colour. The vessels also often have fine carved decoration on the interior. Dated to the 18th century (see Plate 228).

WW.5 – (1 Sherd) Small coffee cup with faceted sides and a bright white fabric, with a frosty, semi-translucent white glaze, decorated on the exterior with faint blue streaks. Dated to between the 19th - 20th centuries (see Plate 229).

Coherence: Apart from WW.0 the groups are reasonably coherent.

Decoration: Mostly plain though see WW.4 and WW.5.

Form(s)	Description	Rim	Body	Base	H	W	D	T
WW.1: 00	Open bowls	Not known	Open	Not known	Not known	Not known	Not known	0.5 - 0.7cm
WW.2: 01	Large open bowls	Not known	Open, shallow profile	Foot-ring	Not known	Not known	Not known	0.5 - 1cm
WW.3: 01	Small bowls	Gently everted or flanged	Open, mid-depth	Fine pointed foot-ring	Not known	13 - 16cm	13 - 16cm	0.2 - 0.4cm
WW.4: 01	Medium sized bowls	Not known	Open, shallow profile	Narrow rounded foot-ring	Not known	Not known	Foot-ring 15cm	0.35 - 0.5cm
WW.5: 01	Faceted cup	Gently everted, squared lip	Steep faceted sides	Not known	Not known	7cm	7cm	0.4cm

Parallels and Dating: See individual entries above (spot dated, Krahl 04/09/2003).

Origin: South China.

160. QING.1-2 (Qingbai, Groups 1 & 2)

Fabric No: 75

Kennet Class: None.

Basis of Grouping: Glaze colour and quality.

Defining Characteristics: Very fine, pure-white porcelain body with a light, eggshell-blue glaze. The quality of glaze varies quite extensively and includes examples with a fine, even gloss and others that are coarse and heavily crazed. A wide range of forms is also represented.

QING.1 – (83 Sherds) As described above. Dated to between the 11th - 13th centuries (see Plate 217).

QING.2 – (2 Sherds) Very similar to QING.1, except that the decoration is more ornate and the glaze is particularly bright. It is not clear if these are consistent traits of the late dated Qingbai as the sample of QING.2 is very small. Dated to the 14th century (see Plate 218).

Coherence: Some features of the class are consistent but there is also a wide range in terms of quality of glaze, form and even fabric. Clearly the material is the product of a number of different kilns.

Decoration: Mostly plain though some pieces have stamped, carved, incised or combed decoration. There are also examples with carved fluting in a lotus-petal design, either on the exterior or interior.

Parallels and Dating: See individual entries above (spot dated, Krahl 04/09/2003).

Origin: Kiangsi.

161. DEH.1-2 (Dehua Moulded Ware, Groups 1 & 2)

Fabric No: 79

Kennet Class: Kennet's DHM and DHP classes have been amalgamated here into DEH.1 as there is nothing to suggest that there is actually a chronological distinction between the two. DEH.2 has no parallels in the Kennet's classification.

Basis of Grouping: Vessel forms and fabric.

Defining Characteristics: Small, standardised bowl forms with a sugary, white porcelain body and a clear white or grey glaze covering the interior and exterior but stopping before the base and rim. The exteriors can be plain or decorated in relief. Two aspects of the form are particularly diagnostic: the rim, which is unglazed with a squared lip, and the base, which has a shallow well and a low rounded foot-ring.

DEH.1 – (99 Sherds) As described above. Dated to the 12th - 13th century. Examples of Plain Dehua moulded ware also occur in Phase E-10 at Kush indicating that the class may not have come into circulation within the area until the late 13th century (Kennet, 2004: 48-9, table 3). This may also be supported by the occurrence of the class at K103 in the Minab area, which has an assemblage predominantly, though not exclusively dated to the 13th - 14th centuries (P. Morgan, 1991: 70-71) (see Plate 219).

DEH.2 – (1 Sherd) Has a slightly denser, less sugary fabric and a brighter, more glossy opaque white glaze. Otherwise the form is similar, although the available example has the addition of a low step in the interior base floor. Dated to the 18th century (see Plate 220).

Coherence: Very coherent and standardised class.

Decoration: Small, short sided vessels are generally relief decorated, most commonly with lotus petals but also other designs. Larger open bowls are always plain.

Further Information: The class is easily confused with WWS.10, particularly in relation to vessel form and glazing. The most obvious difference is that the fabric is not as glassy and the glaze appears softer.

Form(s)	Description	Rim	Body	Base	H	W	D	T
DEH.1: 01	Short sided bowls with decoration	Squared, unglazed	Open, steep sides	Low rounded foot-ring	2.5 - 3.4cm	8 - 10cm	8 - 10cm	0.3 - 0.5cm
DEH.1: 02	Plain open bowls	Squared, unglazed	Open, mid-depth	Low rounded foot-ring	8.5cm	20cm	20cm	0.25 - 0.4cm
DEH.2: 01	Plain open bowls	Not known	Open, mid-depth	Low rounded foot-ring	Not known	Not known	Not known	0.4cm

Parallels and Dating: See individual entries above (spot dated, Krahl 04/09/2003).

Origin: Southern China.

162. LQC.1-4 (Longquan Celadon, Groups 1 - 4)

Fabric No: 76

Kennet Class: The large LQC assemblage in the Williamson Collection includes wide range of diagnostic forms, which have been divided into sub-classes based on specified date ranges. Kennet's LQC class could fit into any of these sub-classes. In addition, the three diagnostic types that Kennet defined (Type 107, 111 and 114), while finding parallels in the forms distinguished in the Williamson Collection, have proved to be diagnostic only when combined with other factors such fluting on the interior or exterior or wavy line decoration (see below).

Basis of Grouping: Glaze type.

Defining Characteristics: Very hard fired, pure, porcelainous-stoneware body with a thick, soft, opaque green slip-glaze[32]. The glaze colour and quality varies quite extensively and can include a range from light turquoise-green to dark olive-green or brown and from soft, glossy and uncrazed to thick, opaque and heavily crazed. Four sub-classes have been defined that correspond to the chronological development of Longquan Celadon defined on the basis of specific form and decorative technique.

LQC.1 – (120 Sherds) Dated to the 13th - early 14th century (see Plates 181 & 182).

LQC.2 – (349 Sherds) Dated to the 14th century (see Plates 183-191).

LQC.3 – (202 Sherds) Dated to the 15th century (see Plates 192-197).

LQC.4 – (331 Sherds) General group dated either to the 14th or 15th century (no illustration).

Coherence: Generally coherent and readily recognisable, however the internal sub-divisions within the class can be complex and sometimes difficult to discern.

Decoration: Mostly plain, but can also have carved, stamped, moulded or planed decoration. See notes on individual forms.

Further Information: The quantity of early celadons in the collection, i.e. those from the 13th century, is very low, which is the pattern that one would expect to see in lower-status trade assemblages. Overall, the vast bulk of the assemblage is made up of material produced during the 14th century. There is a rather small quantity of 15th century material. This is surprising because Longquan celadon of the 15th century is normally very common. The same absence for this period has been noted with the CBW, which is when that class fist started to become a common export ware. In both cases it is difficult to find an explanation for the absence of 15th century material, as this should have been a period when trade with the Far East flourished in the Persian Gulf.

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[32] The thick opaque quality and the perfect fit of the Longquan Celadon glaze is due to a combination of its correct maturation during firing (Leach, 1940: 127), the suspension effect of low-levels of ferrous oxide (1.5 - 3%) introduced into the glaze within a clay-slip (Cardew, 1973, 139), and the fact that the glaze was applied raw (without a pre-biscuit firing) as a slip-glaze (Wood, 1978: 18-20). A slip glaze-is one that contains a significant proportion of clay-slip (c.80% for LQC), usually of the same clay as the underlying vessel body, which means that the glaze undergoes similar thermal expansion/contraction rates as the body and as a result a 'good fit'.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LQC.1: 01	Bowls with Appliqué decoration	Flanged with thinning lip	Open, mid-depth	Various foot-rings	c.3.5 - 9cm	14 - 32cm	14 - 32cm	0.4 - 1.1cm
LQC.1: 02	Flanged & beaked rimmed bowls, fluted interiors	Everted straight or beaked flange	Open, mid-depth	Foot-ring	Not known	13 - 34cm	13 - 34cm	0.4 - 0.6cm
LQC.1: 03	Flanged & beaked rimmed bowls, fluted exteriors	Everted straight or beaked flange	Open, mid-depth	Straight thin foot-ring	Not known	13 - 35cm	13 - 35cm	0.4 - 0.6cm
LQC.1: 04	Lotus bowls with broadly incised petals	Simple rim, thinning lip	Open, mid-depth	Not known	Not known	23cm	23cm	0.5cm
LQC.1: 05	Small jar with concave base	Not known	Rounded with heavy join mark on the interior	Small concave	c.7cm	10cm	Not known	0.4 - 0.5cm

Notes on LQC.1 Forms:

LQC.1: 01 – Appliqué decorated interior, mostly fish, floated over the glaze in the centre of the interior base. Exteriors are mostly fluted. There are two forms within the group, one smaller with a thin, straight foot-ring and a second with a thick base with a heavy foot-ring with a sloping outer edge. Dated to the late 13th - mid 14th century (before AD 1368).

LQC.1: 02 – Fluted exterior. Fired standing on foot-ring. Dated to the late 13th - early 14th century.

LQC.1: 03 – Plain or fluted exterior. Straight or beaked flange rim. Fired standing on foot-ring. Dated to the late 13th - early 14th century.

LQC.1: 04 – Lotus bowls with broad, widely spaced petals carved on the exterior. The chamfer on the petals and the groove between them is cut particularly clearly. Dated to the second half of the 13th century.

LQC.1: 05 – Small globular jars thrown in two sections and luted together with a crude join mark on the interior. Dated to the 13th century.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LQC.2: 01	Lotus bowls	Simple thinning lip	Open, mid-depth or steep sides	Thin straight foot-ring	c.9 - 9.5cm	15 - 22cm	15 - 22cm	0.6cm
LQC.2: 02	Lobe rimmed internally fluted dishes	Lobed everted flange	Open, mid-depth	Foot-rings	Not known	28 - 38cm	28 - 38cm	0.5 - 0.8cm
LQC.2: 03	Shallow lotus bowls	Straight flanged rims	Open, shallow profile	Fine straight foot-ring	3.7cm	13cm	13cm	0.3 - 0.7cm
LQC.2: 04	Scalloped rimmed lotus bowls	Scalloped rim, rounded lip	Open, mid depth	Not known	Not known	10 - 16cm	10 - 16cm	0.5 - 0.6cm
LQC.2: 05	Small jars with fluted exteriors	Vertical unglazed rim with rounded lip	Rounded body with heavy fluting	Concave well, unglazed foot-ring	8cm	8.2cm	5.5cm	0.4 - 0.6cm
LQC.2: 06	Lids, plain and fluted	N/A	N/A	N/A	3cm	15cm	15cm	0.4 - 0.5cm
LQC.2: 08	Thick ribbed wine jars	Not known	Heavy horizontal ribbing	Not known	Not known	Not known	Not known	0.7 - 1.6cm

LQC.2: 09	Closed spouted vessel	Not known	Rounded with a narrow spout	Not known	Not known	Not known	Not known	0.6cm
LQC.2: 10	Lotus bowl with a carination below the rim	Vertical gently everted lip	Half-closed, mid-depth, fluted exterior	Not known	Not known	14 - 20cm	13 - 19cm	0.4 - 0.6cm
LQC.2: 11	Flanged rimmed dishes	Straight everted flange	Open, mid-depth with fluted exterior	Various foot-rings	5.5 - 6.5cm	23 - 36cm	23 - 36cm	0.7 - 0.9cm
LQC.2: 12	Large flanged and beaked rimed bowls	Flanged and beaked	Open, mid-depth with incised interior	Not known	Not known	38 - 41cm	38 - 41cm	0.6 - 1cm
LQC.2: 13	Small incised decorated bowls with gently everted rims	Gently everted rims	Open, incised decoration on the interior and/or exterior	Thin straight foot-ring	7cm	18cm	18cm	0.5 - 0.6cm
LQC.2: 14	Closed bowls with incised decorated exteriors	Simple thinning lip	Closed upright walls	Not known	7 - 8cm	12 - 14cm	12 - 14cm	0.35 - 0.5cm
LQC.2: 15	Straight narrow foot-rings	Not known	Open, mid-depth, plain or fluted	Straight narrow foot-ring	Not known	Not known	Foot-ring 3 - 6cm	0.5 - 0.9cm
LQC.2: 16	Heavy dish foot-ring with sloping exterior edge	Not known	Plain exterior some with incised interior	Unglaze d bottom of foot-ring	Not known	Not known	Foot-ring 12 - 18cm	0.6 - 1cm
LQC.2: 17	Small squared foot-ring fired on rings	Not known	Fluted interior and exterior	Short squared foot-ring	Not known	Not known	Foot-ring 16cm	0.7 - 1.1cm
LQC.2: 18	Heavy bowl fired on rings	Not known	Mould decorated exterior & incised interior	Squared foot-ring unglazed inside well	Not known	Not known	Foot-ring 12cm	1.2cm
LQC.2: 19	Mixed bowl forms with caved decoration	Various	Carved decorated interiors and sometimes exteriors	Various	N/A	N/A	N/A	N/A
LQC.2: 20	Mixed bowl forms with moulded decoration	Various	Moulded decoration on the interior, exterior or both	Various	N/A	N/A	N/A	N/A

Notes on LQC.2 Forms:

LQC.2: 01 – Lotus bowls with fluted exterior. Two forms, one with upright straight sides which is rare and another with an open mid-depth profile which is common. Dated to the 14th century.

LQC.2: 02 – Fluted interior and exterior, or interior only. Also carved fluting on the rim flange. Dated to the 14th century.

LQC.2: 03 – Carved lotus petals on the exterior. Dated to the 14th century.

LQC.2: 04 – Vessels with scalloped rimmed and walls. Dated to the 14th century.

LQC.2: 05 – Thrown in separate sections luted together with a pronounced join mark on the interior. Heavily fluted exterior. Dated to the 14th century.

LQC.2: 06 – Plain or fluted lids from small to large jars. Unglazed inside. Dated to the 14th century.

LQC.2: 07 – Unglazed base. Dated to the 14th century.

LQC.2: 08 – Unglazed interior. Dated to the 14th century.

LQC.2: 09 – Very rare spouted vessel. Dated to the 14th century.
LQC.2: 10 – Some with incised decorated exteriors. Dated to the 14th century.
LQC.2: 11 – Fired on a stacking ring with an unglazed zone inside the foot-well. Some with carved interior decoration. Dated to the later 14th century.
LQC.2: 12 – Dated to the 14th century.
LQC.2: 13 – Dated to the 14th century.
LQC.2: 14 – Dated to the 14th century.
LQC.2: 15 – Small narrow foot-ring. Dated to the 14th century.
LQC.2: 16 – Thick foot-ring with a sloping outer edge and vertical inner edge which is unglazed and stacked on the base. Dated to the 14th century.
LQC.2: 17 – Small, squared foot-ring with an unglazed zone inside the foot-well where the vessel was fired stacked on rings. Dated probably to the later 14th century.
LQC.2: 18 – Squared foot-ring with an unglazed zone inside the foot well were the vessel was fired stacked on rings. Dated probably to the later 14th century.
LQC.2: 19 – Mixed bowl forms with carved decorated in interiors and sometimes exteriors. Dated to the 14th century.
LQC.2: 20 – Mixed moulded bowls with decoration either on the interior or exterior or on both. Sometimes combined with incised decoration.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LQC.3: 01	Plain 'S' profile rimmed bowls	Gently everted 'S' profile rim	Open, mid-depth, some incised	Not known	Not known	10 - 21cm	10 - 21cm	0.4 - 0.6cm
LQC.3: 02	Lotus bowls	Simple	Open, shallow incised lotus petals	Not known	Not known	13 - 19cm	13 - 19cm	0.5 - 0.6cm
LQC.3: 03	Lobed everted 'S' profile rimmed bowls or cups	Lobed everted 'S' profile rim	Open, shallow or steep sides, plain or fluted	Not known	Not known	9 - 29cm	9 - 29cm	0.4 - 0.7cm
LQC.3: 04	Thick walled dishes with flanged rims	Straight or beaked flange	Open, shallow profile, plain or fluted	Squared foot-ring	Not known	25 - 44cm	25 - 44cm	0.7 - 2.3cm
LQC.3: 05	Bowls with moulded wavy decoration	Gently everted, simple or lobed	Open, mid-depth	Not known	Not known	15 - 18cm	15 - 18cm	0.4 - 0.5cm
LQC.3: 06	Thick foot-rings fired on spacer rings	Not known	Open, mid-depth or shallow	Thick foot-ring sloping outer edge	Not known	Not known	Foot-ring 14 - 16cm	0.6 - 0.8cm
LQC.3: 07	Squared foot-ring fired on spacer rings	Not known	Open, small and medium sized bowls	Squared foot-ring	Not known	Not known	Foot-ring 5 - 10cm	0.4 - 0.9cm
LQC.3: 08	Small bowls with moulded characters on the interior	Simple fattened rim with rounded lip	Open, steep sides	Not known	Not known	17cm	17cm	0.4 - 0.5cm

Notes on LQC.3 Forms:

LQC.3: 01 – Plain or incised decorated interior or exterior. Dated to the 15th century
LQC.3: 02 – Incised petals rather than deeply carved fluting. Some with incised decoration on the interior. Dated to the 15th century.
LQC.3: 03 – Plain or fluted interior or exterior. Dated to the 15th century.
LQC.3: 04 – Unglazed zone on the inside of the foot-well where the vessels were fired on spacer rings. Dated to the 15th century.
LQC.3: 05 – Moulded floral decoration on the interior including wavy lines just below the rim. Dated to the 15th century.

LQC.3: 06 – Plain or fluted interior and exterior with an unglazed zone inside the foot-well where the vessels were fired on spacer rings. Dated to the 15th century.

LQC.3: 07 – Unglazed zone on the inside of the foot-well where the vessels were fired on spacer rings. The interior of the vessels can be plain, incised, carved or stamped. Dated to the 15th century.

LQC.3: 08 – Moulded characters impressed on the interior. Dated to the beginning of the 15th century.

Parallels and Dating: Dated to between the 13th - 15th centuries. See specific forms for more precise dating (spot dated, Krahl 04/09/2003).

Origin: The area where LQC was produced stretches for about 100km and spans 16 provinces, of which Longquan is only one. Within this area there were around 500 kilns producing LQC, each of which had a capacity of around 25,000 pots per firing. Given the fact that the output from each kiln was so high, they are distributed over a wide area, none have been excavated and the area has produced celadon pottery for hundreds of years (up to the modern day), it is not possible to attribute pieces to a specific site of manufacture. Imitation LQC was also produced in the Guangdong area and can difficult to differentiate. One characteristic that appears to separate the Guangdong group is that the glazes often appear to be darker.

163. GDC.1-4 (Guangdong Celadon, Groups 1 - 4)

Fabric No: 77

Kennet Class: None.

Basis of Grouping: Glaze and fabric.

Defining Characteristics:

GDC.1 – (1 Sherd) Fine grained, grey/yellow porcelainous-stoneware body with a cool olive-green glaze with very fine crazing and a soft glossy surface. The form is a lobed rimmed bowl with paddled ridges struck from the exterior and appearing as low ridges on the interior. Imitation Yueh green ware dated to the 11th - 12th century (see Plate 198).

GDC.2 – (8 Sherds) Hard, yellow porcelainous-stoneware with a light olive-green glaze. The glaze appears clear and glassy with regular, fairly coarse crazing. Interior surfaces are decorated in a fluid style with carved and combed elements and a simple incised band just below the rim. The form is a shallow bowl with sharply everted rim. Produced either in the Guangdong or Longquan areas during the 13th - 14th century (see Plate 199).

GDC.3 – (42 Sherds) The forms and style appear very similar to LQC but the body appears yellower in colour and the glaze is a dark olive-green. The inside floor of the vessel is often turned flat with a slight step between the floor and the wall. Most vessels have an unglazed stacking ring on the interior. Dated to the 14th century (see Plate 200).

GDC.4 – (1 Sherd) White porcelain body with a light yellowish green glaze. The glaze has a soft, even gloss and a glassy transparent quality. The vessel is a very thin-walled, small lotus bowl with simple incised petals on the exterior, reminiscent of the late style lotus decoration. Produced either in the Fujien or Guangdong areas during the 14th - 15th century (see Plate 201).

Coherence: All coherent groups although GDC.1 and GDC.4 are only represented by single sherds (spot dated, Krahl 04/09/2003).

Decoration: See individual classes.

Form(s)	Description	Rim	Body	Base	H	W	D	T
GDC.1: 01	Lobed rimmed bowls	Lobed thinning lip	Open, mid-depth	Not known	Not known	20cm	20cm	0.4 - 0.5cm
GDC.2: 01	Shallow bowls with a half rolled rim	Sharply everted	Open, shallow profile	Walls thicken towards base	Not known	30cm	30cm	0.5cm
GDC.3: 01	Lotus bowls	Simple	Open, mid-depth, carved lotus petals	Squared foot-ring	Not known	16 - 21cm	16 - 21cm	0.4 - 0.6cm
GDC.3: 02	Mixed bowl forms and non-identified pieces	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GDC.4: 01	Small simple lotus bowls	Simple rounded lip	Open, mid-depth	Not known	Not known	12cm	12cm	0.3cm

Parallels and Dating: Dated to between the 11th - 15th centuries, see individual classes (spot dated, Krahl 04/09/2003).

Origin: Guangdong province?

164. JDC (Jingdezhen Celadon)

Fabric No: 76 **Illustration:** Plate 202 **Number of Sherds:** 1

Kennet Class: None.

Basis of Grouping: Fabric and glaze.

Defining Characteristics: Very pure white porcelain body with a clear white glaze on the exterior and a fine green celadon glaze on the interior. The form is a medium thick dish with broad carved decoration on the interior. The glaze tends to puddle in the carved incisions emphasising the decoration.

Coherence: Only one sherd represents this class.

Decoration: Broad carved geometric decoration.

Parallels and Dating: Dated to between the 15th or possibly the 16th century (spot dated, Krahl 04/09/2003).

Origin: Jingdezhen.

165. STO.GRY (Grey Glazed Stoneware)

Fabric No: 81 **Illustration:** Plate 179 **Number of Sherds:** 164

Kennet Class: None.

Basis of Grouping: Glaze colour and cover.

Defining Characteristics: Bowls with a fine-grained, stoneware body that is usually grey and re-oxidised orange around the foot. The glaze is clear and transparent and is either plain or finely crazed with occasional black flecks showing through from the body. The glaze covers the interior and exterior, stopping 1 - 2.5cm before the foot. Most bowls have an unglazed stacking ring on the interior with white alumina still adhering. Some vessels have spacer marks instead, especially form STO.G: 05. The class was obviously mass-produced as it is very standardised and quickly made. The bases are thick and the foot rings are roughly turned with tooling marks left un-smoothed.

Coherence: Easily recognisable group.

Decoration: Most are plain though some pieces have an incised wavy line or crude fluting both echoing the lotus petal design. Some others have a single incised band below the rim interior. Some have a further band close to the base interior.

Form(s)	Description	Rim	Body	Base	H	W	D	T
STO.G: 01	Simple rimmed bowls	Simple rounded or pointed lip	Open, mid-depth	Foot-ring	4.8cm	14 - 22cm	14 - 22cm	0.3 - 0.6cm
STO.G: 02	Gently everted rimmed bowls	Gently everted, rounded lip	Open, mid-depth	Foot-ring	Not known	20 - 22cm	20 - 22cm	0.3 - 0.6cm
STO.G: 03	Flanged rimmed bowls	Straight or slightly curved flange	Open, mid-depth	Foot-ring	Not known	23 - 24cm	23 - 24cm	0.3 - 0.6cm
STO.G: 04	Squared projecting foot-ring	Simple, everted or flanged	Open, mid-depth	Squared, chamfer-ed outer edge	4.8cm	Not known	Foot-ring 8 - 11cm	0.3 - 1cm
STO.G: 05	Broad flattened foot-ring	Simple, everted or flanged	Open, mid-depth	Broad flattened foot-ring	Not known	Not known	Foot-ring 10 - 12cm	0.35 - 0.8cm

Parallels and Dating: The class has been spot dated to the Song or Yuan periods of the 11th - 13th centuries (spot dated, Guy 12/12/2003) although within the Persian Gulf it has been found in possibly slightly later contexts, in particular Luluyyah fort in Sharjah which has been dated to the 13th - early 14th century based on the LQC finds (Sasaki & Sasaki, 2001: pl. 7 centre row left & 2nd column centre row) and at site K103 (Old Hormuz) in the Minab area, which has produced an assemblage that is predominantly, although not exclusively, from the 13th - 14th centuries (P. Morgan, 1991: 70-71).

Origin: Most probably manufactured in Southern China, probably in Guangdong province, though there is also a slight possibility that it was produced in Vietnam.

166. STO.BUR (Burmese Stoneware)

Fabric No: 82 **Illustration:** Plate 178 **Number of Sherds:** 50

Kennet Class: STO.BUR would be included within Kennet's generic SCHINA class.

Basis of Grouping: Fabric and glaze

Defining Characteristics: Hard, gritty, dark-red or grey stoneware body with a dark, bottle-green, coarse or finely crazed, glassy glaze covering the interior and exterior and stopping before or at the bottom of the foot. The glaze has a tendency to puddle leaving thick pooled and thin bare areas. Vessels are robustly built and often large, but smaller vessels are present too.

Coherence: Distinctive and easily recognisable class.

Decoration: Wide range of carved motifs, mostly on the interior. Exteriors can also be fluted. Interior decoration includes horizontal bands, vertical grooves, paired grooves, fluting or free-flowing scrolls and arcs. The decoration can be placed either on or below the flange of the rim.

Further Information: Probably produced in the Myanmar mainland (Burma) although the provenance and dating of this material has only recently begun to be understood.

Form(s)	Description	Rim	Body	Base	H	W	D	T
STO.B: 01	Heavy flanged rimmed bowls	Straight or beaked, straight or lobed rim	Open, mid-depth	Shallow recessed foot-well	c.7cm	34 - 38cm	34 - 38cm	0.7 - 1.2cm
STO.B: 02	Small fanged rimmed bowls	Straight flange, rounded lip	Open, mid-depth	Shallow recessed foot-well	Not known	28 - 30cm	28 - 30cm	0.5 - 0.8cm
STO.B: 03	High footed simple rimmed bowls	Simple rims with rounded lip	Open, mid-depth	Tall tapered foot-ring	Not known	18 - 34cm	18 - 34cm	0.4 - 0.9cm

Parallels and Dating: 15th - 17th century (spot dated, Guy 12/12/2003).

Origin: Myanmar (Burma), lower mainland.

167. STO.THAI (Thai Stoneware)

Fabric No: 83 **Illustration:** Plate 177 **Number of Sherds:** 30

Kennet Class: STO.THAI would be included within Kennet's generic SCHINA class.

Basis of Grouping: Fabric and glaze

Defining Characteristics: Various bowl forms on a compact buff coloured stoneware with fine black grits and a slightly coarse grainy structure. The glaze is glossy, coarsely crazed, has a tendency to puddle and ranges in colour from dark green to very light blue-green but always tends to be bright with a blue-green tinge. Most forms have glaze covering both the interior and exterior stopping at the base of the foot, though there is one grinding-bowl form which is unglazed on the interior.

Coherence: Fabric and glaze are generally consistent but a wide range of specific productions are represented within the class.

Decoration: Either plain or with carved decoration. Some vessels have fluted exteriors. Interior decoration includes both fluting and more intricate free-flowing designs. One vessel has deep combed grooves but these are functional rather than decorative.

Further Information: The coarse fabric and glassy-green glaze of STO.THAI is similar to STO.BUR. The main difference is that the fabric tends to be lighter and more compact and the glaze is generally brighter with a characteristic blue tinge.

Form(s)	Description	Rim	Body	Base	H	W	D	T
STO.T: 01	Flanged rimmed bowls	Straight of beaked flange	Open, mid-depth	Low squared foot-ring	Not known	38 - 40cm	38 - 40cm	0.7 - 1.5cm

STO.T: 02	High footed simple rimmed bowls	Simple rounded or faceted	Open, mid-depth	Mostly high thin foot-ring	Not known	16 - 30cm	16 - 30cm	0.5 - 0.7cm
STO.T: 03	Foot-ring with central depression	Not known	Open	Squared or pointed foot-ring	Not known	Not known	Foot-ring 11cm	1cm
STO.T: 04	Flat top rimmed bowls	Flat top with a slight internal flange	Open, mid-depth	Not known	Not known	34cm	34cm	0.7cm
STO.T: 05	Thick walled grinding bowl	Rounded slightly clubbed	Open, steep sides, unglazed interior	Not known	Not known	19cm	19cm	0.9cm

Notes on Individual Forms:

STO.T: 01 – Plain or fluted interior, exterior plain.
STO.T: 02 – Mostly plain, some with incised or fluted interiors.
STO.T: 03 – Foot-rings with a distinctive depression in the centre where the vessels have been stacked on rings, which often leave a glassy black residue where they have been separated. Apparently a distinctive feature of Thai green wares.
STO.T: 04 – Plain interior, exterior has double incised bands below the rim and vertical fluting on the body below these.
STO.T: 05 – Grinding-bowls with a glazed exterior with the glaze stopping before the rim and an unglazed interior with deep incised grooves to facilitate the grinding process.

Parallels and Dating: 15th - early 17th century (spot dated, Guy 12/12/2003).

Origin: Central Thailand.

168. STO.N-ID (Non-Identified Southeast Asian Stoneware)

Fabric No: Mostly 83 **Illustration:** None **Number of Sherds:** 25

Kennet Class: STO.N-ID would be included within Kennet's generic SCHINA class.

Basis of Grouping: Condition or status

Defining Characteristics: Assorted group of coarse stonewares with coarsely-crazed, glassy-green glaze covering the interior and exterior down to the bottom of the foot. Most of the glazed are degraded or in some way unique. The majority of the material has a light, black-flecked fabric that appears closer to SOR.THAI than STO.BUR.

Coherence: Disparate selection.

Decoration: Plain or incised.

Parallels and Dating: Although there are no direct parallels for the sherds included in this class, it is likely that they belong to the same 15th - 17th century date range as the other Southeast Asian green-glazed stoneware classes (examined by Guy 12/12/2003).

Origin: Southeast Asia.

169. DUSUN (Dusun Stoneware Storage Jars)

Fabric No: N/A **Illustration:** Plate 169 **Number of Sherds:** 15

Kennet Class: DUSUN.

Basis of Grouping: Form and glaze.

Defining Characteristics: Heavy, thick-walled storage jars with a distinctive unglazed vertical collar rim and small 'butterfly' handles on the shoulder. The jars are covered on the interior and exterior above the base, with a thin, uneven, finely-crazed, olive-green glaze with a tendency to puddle and slip. The fabric tends to be a light coloured stoneware or porcelainous-stoneware but the precise composition varies extensively.

Coherence: Vessel form and glaze are coherent but the fabric varies extensively.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
DUS: 01	Collar necked jars	Vertical collar with a squared or rounded lip	Rounded body, sloping shoulders with butterfly handles	Flat	c. 29 - 32cm	c.32 - 38cm	15 - 20cm	0.7 - 1.8cm

Parallels and Dating: Large quantities of the these jars have been recovered from the pre-architectural horizon at Siraf as well as from levels extending into the early Samarra horizon period suggesting an 8th - 9th century range (Whitehouse, 1968: 18). More recently DUSUN jars used as containers for stacks of Changsha bowls were recovered from the Belitung shipwreck discovered off the coast of Indonesia in the West Java Sea (Guy, 2001-02: 15, 19) and dated to AD 826 or slightly later based on an inscription on the bottom of one of the Changsha bowls (Guy, 2001-02: 25).

Origin: Southern China?

170. MTB.1-2 (Martaban Iron-Glazed Stoneware Storage Jars, Groups 1 & 2)

Fabric No: 67, 68

Kennet Class: MTB.1 appears to be the same as MTB and MTB.2 to BSTONE.

Basis of Grouping: Fabric, glazing and vessel form.

Defining Characteristics:

MTB.1 – (78 Sherds) Coarse, black-gritted, grey, stoneware jars (Fabric 67) with rolled rims, short necks and wide shoulders with a series of small horizontally aligned 'butterfly' handles, a globular body and a flat base. The interiors are always plain while the exteriors are covered with a finely-crazed, patchy, dark olive-green or black iron-glaze, which is often badly degraded leaving speckles of glaze or no glaze at all. The class occurs at al-Mataf from Phase II of the Mosque sequence, suggesting that it began to circulate from the 14th century and continued as late at the early 17th century when the site was abandoned (Kennet, 2004: 50, table 7) (see Plate 170).

MTB.2 – (62 Sherds) Similar vessel form to MTB.1 except that the jars appear to fall predominantly within the larger size range and to have a concave base. Other key differences include the fabric, which is also a coarse stoneware but with less coarse inclusions (Fabric 68), and the surface treatment, which includes a thin iron-wash on the interior and exterior leaving a streaky or blotchy effect on exposed surfaces and a variegated iron-glaze with patches of dark olive-green, brown, very dark brown and creamy grey. The glaze is often degraded and can be worn away all together, though not as frequently as MTB.1. The class may have a similar date range to MTB.1, although it appears to correspond closely to the description of BSTONE, a few sherds of which occur at al-Mataf between Phase II - III of the Mosque sequence and Period III of the Occupation area, which are dated to between the 14th - 16th centuries (Kennet, 2004: 50, tables 7 & 8). (see Plate 171).

Coherence: Very consistent and readily recognisable class, although MTB.2 appears to be slightly more varied in terms of fabric and glaze.

Decoration: Mostly plain, though some pieces have incised lines. There are also a few pieces in both groups with embossed characters and one MTB.1 sherd with appliqué decoration.

Form(s)	Description	Rim	Body	Base	H	W	D	T
MTB.1: 01	Globular jars	Rolled	Short neck, globular body	Flat	c.16 - 22cm	c.23 - 32cm	9 - 14cm	0.4 - 1cm
MTB.2: 01	Globular jars	Rolled	Short neck, globular body	Concave	c.17 - 21cm	27 - 30cm	11 - 14cm	0.4 - 1cm

Parallels and Dating: 14th - 17th centuries, see individual entries above.

Origin: Southeast Asia.

171. IGSJ (Iron-Glazed Stoneware Storage Jars)

Fabric No: N/A **Illustration:** Plate 174 **Number of Sherds:** 17

Kennet Class: None.

Basis of Grouping: Glaze category.

Defining Characteristics: Various stoneware jars with a thick brown or black iron-glaze generally covering both the interior and exterior. Each of the sherds is generally unique.

Coherence: Disparate selection of unique pieces.

Decoration: Mostly plain. One piece has broad (0.7 - 1.1cm) underglaze iron lines across the mid-belly region and a coarse, yellow-speckled glaze.

Parallels and Dating: Not known.

Origin: East Asia.

172. DAB (Dark Brown Glazed Stoneware)

Fabric No: 69 **Illustration:** Plate 173 **Number of Sherds:** 17

Kennet Class: None.

Basis of Grouping: Fabric and glaze.

Defining Characteristics: Heavy, thick-walled, everted-rimmed jars in a range of sizes on a hard, dark, reddish-grey stoneware with fairly frequent rounded inclusions covered on the exterior with a soft, shiny black glaze with highlights of orange or yellow shining through from the body below.

Coherence: A reasonably coherent class.

Decoration: Mostly plain though one piece has shallow incised vertical furrows cross-cut by deeper horizontal bands and another piece has a applied strip of clay beneath the glaze.

Form(s)	Description	Rim	Body	Base	H	W	D	T
DAB: 01	Everted rimmed jars	Various everted and clubbed forms	Short or medium neck, broad shoulders, rounded body	Flat	c.18 - 50cm	c.20 - 67cm	12 - 44cm	0.4 - 1.5cm

Parallels and Dating: Not known.

Origin: East Asia.

173. LIB (Light Brown Glazed Stoneware)

Fabric No: 70 **Illustration:** Plate 172 **Number of Sherds:** 24

Kennet Class: None.

Basis of Grouping: Fabric and glaze.

Defining Characteristics: A wide range of bowl and jar forms on a light, cream stoneware with a thin, yellowish-brown iron-glaze with the body showing through from below. The glaze covers the exterior only of jars and the interior and exterior or interior only of bowls.

Coherence: Mixed class that includes a number of different productions that share some basic characteristics.

Decoration: Mostly plain except for one or two thin incised bands mid-way down the shoulder of jars. There are also a few pieces with intricate incised decoration on the body.

Form(s)	Description	Rim	Body	Base	H	W	D	T
LIB: 01	Everted rimmed jars	Rolled or clubbed	Short neck, rounded body, some with butterfly handles	Flat	c.12 - 26cm	c.15 - 30cm	10 - 18cm	0.4 - 0.9cm
LIB: 02	Club rimmed bowls	Everted club	Steep upright half-closed sides	Not known	c.12 - 15cm	28 - 36cm	28 - 36cm	0.5 - 0.8cm

LIB: 03	One-off jar forms	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Parallels and Dating: Not known.

Origin: East Asia.

174. CHANG (Changsha Painted Stoneware)

Fabric No: 78 **Illustration:** Plate 168 **Number of Sherds:** 12

Kennet Class: CHANG.

Basis of Grouping: Decorative style and glaze colour.

Defining Characteristics: Sandy yellow stoneware bowls with a clear, finely-crazed, fawn-coloured glaze decorated with areas of dark brown close to the rim and streaks of brown and green across the interior of the vessel.

Coherence: Coherent and distinctive class.

Decoration: Flowing streaks of brown and green and blocks of dark brown on the rim formed by dipping the vessel on four sides to form a square frame on the interior.

Form(s)	Description	Rim	Body	Base	H	W	D	T
CHA: 01	Small bowls	Gently everted lip	Open, mid-depth	Squared foot-ring	Not known	13 - 16cm	13 - 16cm	0.3 - 0.6cm

Parallels and Dating: Dated to the 9th - 10th centuries (spot dated, Krahl 04/09/2003). Changsha occurs in abundance in the pre-architectural layers at Siraf, dated to within the first quarter of 9th century (Whitehouse, 1979: 52, fig. 3). The dating of the class has been supported more recently by the discovery of 56,500 Changsha bowls on an Arab shipwreck in Southeast Asia dated to AD c.826 (Guy, 2001-02: 17, 25).

Origin: Hunan province.

175. GWSG (Green on White Splashed Glazed Ware)

Fabric No: 86 **Illustration:** None **Number of Sherds:** 11

Kennet Class: None.

Basis of Grouping: Fabric and decorative scheme.

Defining Characteristics: Fine, dense, cream to light-grey, hard-fired earthenware or white stoneware covered on the interior and exterior with a clear, slightly opaque, white glaze with very fine crazing, which appears to be a diagnostic feature. The glaze stops before the foot and is embellished with bright, diffuse, bottle-green splashes.

Coherence: Coherent and distinctive class.

Decoration: Random splashes, radial streaks or spots.

Further Information: The class can be very difficult to distinguish reliably from its Islamic counterpart SPL.GW, yet there do appear to be some appreciable differences. In particular the body tends to be harder and more compact, the glaze is better fitted and thus it tends to be better preserved, the splashed colour is brighter and slightly less diffuse, the turning on the base is generally more crisp, the fine hairline crazing in the glaze appears to be diagnostic and the splashes tend to be more evenly arranged.

Form(s)	Description	Rim	Body	Base	H	W	D	T
GWS: 01	Open bowls	Simple of half rolled	Open, mid-depth	Squared foot-ring	Not known	20 - 21cm	20 - 21cm	0.4 - 0.6cm

Parallels and Dating: 9th - 10th centuries (spot dated, Krahl 04/09/2003).

Origin: Hunan province.

176. CIZHOU (Cizhou Ware)

Fabric No: N/A **Illustration:** Plates 175 & 176 **Number of Sherds:** 1

Kennet Class: None.

Basis of Grouping: Surface decoration.

Defining Characteristics: Medium-sized jars with a thick, shiny-black, temmoku-glaze on the interior and an opaque, white slip-glazed exterior with thin washes of black that have been incised through to the white glaze. The body is fine and white with a slightly 'dry' sandy appearance.

Coherence: Only one sherd represents this class.

Decoration: Strongly contrasting, crude, naturalistic decoration provided by incised black on white.

Parallels and Dating: Probably 14th century (spot dated, Krahl 04/09/2003).

Origin: Cizhou type from Southern China.

177. CREAM (Creamy-White Glazed Red Earthenware)

Fabric No: 74 **Illustration:** Plate 180 **Number of Sherds:** 21

Kennet Class: EASTIN.

Basis of Grouping: Fabric and glaze colour/quality.

Defining Characteristics: Dishes and bowls with a dark-red, gritty, hard-fired earthenware fabric and a thick, opaque, creamy-white or light-green, coarsely-crazed glaze covering both the interior and exterior down to the base of the foot.

Coherence: Coherent and distinctive class.

Decoration: None.

Form(s)	Description	Rim	Body	Base	H	W	D	T
CRE: 01	Various open bowls & dishes	Simple or flanged with rounded lip	Open, mid-depth or shallow	Cleanly turned foot-ring	c.9 - 12cm	20 - 40cm	20 - 40cm	0.5 - 1.2cm

Parallels and Dating: An identical class with an opaque, white or light-green glaze and a hard red body with finely-tooled crenulations on the exterior of the foot-ring was recovered from above the abandonment level in Trench MA-2 at al-Mataf, which Hansman argues occurred in the mid-17th century (Hansman, 1985: 34, pl. V k,n, fig. 9 j,k). From the British excavations at the same site, a number of CREAM sherds where recovered from Phase III of the Mosque, suggesting the class circulated from the late 15th - late 16th centuries onwards (Kennet, 2004: 'EASTIN' 51, table 7).

Origin: Southern China or Southeast Asia.

178. FE.N-ID (Non-Identified Far Eastern Wares)

Fabric No: N/A **Illustration:** None **Number of Sherds:** 7

Kennet Class: CHIN (note that Kennet's CHIN class is not the same as CHIN in the Williamson classification).

Basis of Grouping: One-off pieces.

Defining Characteristics: Assorted pieces that are unique in the Collection but which are all high-fired and therefore from East Asia. Most pieces are iron-glazed stonewares.

Coherence: Disparate selection.

Decoration: Mostly plain apart from one piece with detailed incised decoration.

Parallels and Dating: Not known.

Origin: East Asia.

179. CBW.1-45 (Chinese Blue & White, Groups 1 - 45)

Fabric No: 75

Kennet Class: The large assemblage of CBW in the Williamson Collection has been divided into a large number of different sub-classes, each associated with a specific date range. Kennet's CBW class could fit into any of these sub-classes, apart from the two more specific styles CBW.18, which is equivalent to SWATOW and CBW.19-21, which is equivalent to KRAAK.

Basis of Grouping: Decorative style and quality.

Defining Characteristics: Predominantly open forms but also closed vessels on a pure, generally glassy, white, porcelain body with a clear glaze and decoration in strong cobalt-blue and or sometimes black. There is considerable variation in glaze quality and in the strength and fixity within the glaze of the pigments used for decoration and also some variation in fabric quality. In addition there are many different styles of decoration. Combined, these variables have been used to differentiate 45 different CBW sub-classes.

CBW.1 – (6 Sherds) Mixed group of very early CBW, defined on the basis of date. Most has light-blue, floral-style decoration. One marker of early CBW, seen only on one piece (+12744), is the presence of darker blue decoration in the centre of the vessel framed by a lighter blue or brown band applied with a brush while the vessel was turning on a wheel. Dated to the 14th century (see Plate 230).

CBW.2 – (1 Sherd) Clear, even glaze with bright blue floral decoration. A high-quality group represented by a single sherd dated to the early 15th century (see Plate 231).

CBW.3 – (3 Sherds) High-quality bowls with a soft, even glaze and sharp, bright-blue floral designs on the exterior and a plain interior except for a pair of horizontal bands inside the rim. The style is an imitation of Changhua palace bowls and dates to the mid-15th century (see Plate 232).

CBW.4 – (94 Sherds) Mixed group of medium to low quality rather indistinct material sorted primarily by date. Most pieces have rather diffuse decoration and the glazes are often off-white with heavy crazing. Dated to the late 15th (AD c.1480) - mid 16th century (see Plates 233 and 234).

CBW.5 – (103 Sherds) Poor-quality group with an off-white, green-tinted, bubbly glaze with a soft even sheen, although it is often slightly degraded so the sheen can be lost altogether. The decoration is rendered in a slightly diffuse paint in a consistent style that includes curly abstract patterns, volutes and some floral elements. Dated to the late 15th - early 16th century (see Plate 235).

CBW.6 – (96 Sherds) Poor-quality group with a semi-opaque, off-white, green-tinted glaze with lots of bubbles, quickly-painted, simple, diffuse flowing abstract lines and occasional scrolls. Dated to the late 15th - early 16th century (see Plate 236).

CBW.7 – (4 Sherds) High-quality group with an even, glossy glaze and thin walls with fine carved decoration on the interior combined with clear, bright-blue painted decoration, which includes diaper borders. Dated to the mid-16th century (see Plate 237).

CBW.8 – (6 Sherds) Medium-quality group decorated in sharp, bright-blue with a segmented motif comprised of evenly-spaced, vertical lines between horizontal bands. Dated to the 16th century (see Plate 238).

CBW.9 – (4 Sherds) Low-quality, off-white, green-tinted glaze with floral patterns combined with fine spirals. Dated to the mid-16th century (AD c.1500) (see Plate 239).

CBW.10 – (3 Sherds) Medium-quality group decorated with a simple chrysanthemum roundel in the centre of the vessels and plain bands on the exterior. Dated to the earlier 16th century (see Plate 240).

CBW.11 – (6 Sherds) Medium-quality group decorated in bright-blue with a stylised motif representing tiered registers of Chinese characters. Dated to the earlier 16th century (see Plate 241).

CBW.12 – (24 Sherds) Vessels with distinctive, cross-shaped diaper borders mostly on the rim interior but sometimes also on the rim exterior. The decoration below these borders is variable. Diaper borders do also occur on some of the other CBW sub-classes defined on the basis of other attributes, but CBW.12 is defined solely by their presence. Dated to the early to mid-16th century (see Plate 242).

CBW.13 – (2 Sherds) Very low-quality class with a thick, cloudy, green-blue-tinted glaze decorated with simple dots placed in an evenly-spaced grid across the whole of the vessel exterior. Dated probably to the early 16th century (see Plate 243).

CBW.14 – (37 Sherds) Very low-quality class with a thick, heavily-crazed, off-white, green-tinted glaze with thin, diffuse-blue decoration that includes a combination of scrolls and floral designs. Exterior are often fluted. Dated to the early to mid-16th century (see Plate 244).

CBW.15 – (81 Sherds) High-quality, thin-walled vessels with a soft, shiny glaze and fine well-defined, strong blue decoration. The decoration includes floral designs and other non-figurative patterns with large blank white zones left between each of the elements. Dated to the mid to late 16th century (see Plate 245).

CBW.16 – (60 Sherds) High-quality, thin-walled vessels with a soft, shiny, pure-white glaze with well-defined, detailed, bright blue floral decoration. Decorative elements are well spaced with plenty of white background left between. Dated to the mid - late 16th century (see Plate 246).

CBW.17 – (42 Sherds) Mostly fine-walled vessels with a soft, shiny, pure-white glaze with well-defined, detailed, bright blue figurative decoration. The motifs are all nature scenes with a bird on a rock as a recurrent theme. The decorative elements are well spaced with plenty of white background left between. Dated to the late 16th century (see Plate 247).

CBW.18 – (4 Sherds) Poor-quality Swatow style with thick, opaque, transparent and heavily-crazed glaze with diffuse, weak blue decoration, which often includes elements in-filled with washes of pale blue. Dated to the late 16th century (see Plate 248).

CBW.19 – (36 Sherds) Good-quality Kraak 'flowers' style with an even, soft, shiny, pure-white glaze and strong, well-defined, bright blue decoration. Common decorative elements include panels filled with detailed floral patterns with areas in-filled with washes of pale blue. The decoration tends to occupy much of the vessel's surface. Dated to the late 16th century (see Plate 249).

CBW.20 – (6 Sherds) High-quality Kraak style with an even, soft, shiny, pure-white glaze and strong, well-defined, bright blue decoration. The decoration depicts natural scenes which include deer. The designs cover much of the vessel surface and much of the background is in-filled with blue. Dated to the late 16th century (see Plate 250).

CBW.21 – (44 Sherds) Good to medium-quality, possible Kraak style with a soft, shiny, mostly pure-white glaze with strong, well-defined, mostly bright blue and sometimes grey decoration. The decoration is detailed and figurative, mostly garden scenes, often with areas in-filled with a blue wash, with the design filling much of the vessel surface. Dated to the late 16th - early 17th century (see Plate 251).

CBW.22 – (13 Sherds) Medium-quality with an even, soft, shiny, pure-white glaze and bright, sharp, or sometimes slightly diffuse blue decoration. The decoration is detailed and figurative, depicting nature scenes with areas of blank white background left between the designs. Dated to the late 16th - early 17th century (see Plate 252).

CBW.23 – (125 Sherds) Mixed, low-quality class often with thick, opaque, off-white, cream glaze with bold, crudely-painted decoration. The motifs sometimes include floral elements and scrolls but are often composed of abstract splodges and fronds. Dated to the late 16th century (see Plate 253).

CBW.24 – (3 Sherds) Medium-quality group with degraded, frosty-looking glaze and pale-blue, diffuse, stylised dragon motifs. Dated to the late 16th century (see Plate 254).

CBW.25 – (2 Sherds) High-quality group with a soft, shiny, pure-white glaze and bright, sharp-blue decoration comprised of rows of bunched together spirals occupying the centre of the vessel. Dated to the mid - late 16th century (see Plate 255).

CBW.26 – (84 Sherds) Rather a mixed class with crudely-painted floral designs, often flowers, which have been roughly in-filled with colour. The glaze is generally soft, shiny and pure-white and the decoration mostly sharp and bright. Dated to the late 16th century (see Plate 256).

CBW.27 – (10 Sherds) Rather a mixed class of variable quality with assorted scrolled borders. The glaze can be rather coarse and crazed or fine with a soft, even gloss and pigment that varies from sharp and bright to slightly pale and diffuse. Dated to the late 16th century (see Plate 257).

CBW.28 – (29 Sherds) A mixed, low-quality group with weak, light-blue decoration and a soft dull glaze. The decoration is mostly pictorial and includes areas in-filled with a lighter wash of blue. Dated to the late 16th - early 17th century (see Plate 258).

CBW.29 – (240 Sherds) Mixed group of sherds that are too small to characterise with any precision but which generally have bright, though often slightly diffuse, blue decoration and glaze that varies from pure-white to a slightly off-white grey. The decoration includes nature scenes, floral elements and abstract patterns. Dated to the late 16th - early 17th century (see Plate 259).

CBW.30 – (55 Sherds) Poor-quality group with a glassy-looking, off-white, green-tinted glaze with lots of bubbles and rather diffuse, grey-blue, roughly-painted, floral decoration. Dated to the mid - late 16th century (see Plate 260).

CBW.31 – (18 Sherds) Poor-quality class with heavily-potted forms, a white, or slightly off-white glaze, sometimes with heavy crazing and often with a slightly dull, non-glossy surface. The decoration tends to be sparse and simple, leaving much white background showing. Paired bands both on the interior and exterior are common together with abstract lines, stylised characters and occasional floral elements. Dated to the late 16th - early 17th century (see Plate 231).

CBW.32 – (19 Sherds) Poor-quality class with a pure-white but slightly dull, non-glossy glaze with diffuse, pale-blue decoration. The decoration is crudely painted and consists mostly of abstract splodges together with roughly-painted flowers. Dated possibly to the late 16th century (see Plate 262).

CBW.33 – (41 Sherds) Mixed class containing material with opaque, pink-tinted glaze and soft grey decoration. The material appears to be misfired, fire-damaged or degraded. Many of the pieces are decorated with detailed garden scenes, some of which contain areas of willow pattern. There is also a group of pieces with a distinctive 'mandala' or rosette pattern with a petalled flower in the middle. Some pieces that do not have the damaged glazed but which have the latter design have been included within the group. Dated to the late 16th - early 17th century (see Plate 263).

CBW.34 – (1 Sherd) High-quality, thin-walled vessel with light-brown and white *famile vert* decoration on the exterior and bright, well-defined blue decoration on the interior. Dated to the late 17th century (see Plates 264 & 265).

CBW.35 – (9 Sherds) Soft, shiny, pure-white glaze with bright but slightly diffuse blue decoration and coffee-coloured brown rims. The decoration is slightly crude, mostly floral designs and simplified diaper borders. Dated to the mid - late 17th century (see Plate 266).

CBW.36 – (11 Sherds) Medium to thin-walled vessels with a soft, shiny glaze and dark monochrome-blue exteriors and plain-white interiors. Dated probably to the 17th century (see Plate 267).

CBW.37.1 – (9 Sherds) High-quality group with a soft, shiny, pure-white glaze and well-defined, bright-blue, carefully-painted, floral decoration on the interior and a coffee-brown coloured glaze on the exterior. Dated to the late 17th century (see Plate 268).

CBW.37.2 – (11 Sherds) High-quality group with similar characteristics to CBW.37.1 with a soft, glossy, pure-white glaze and well-defined, bright-blue, carefully-painted, floral decoration, but without the brown-glazed exterior. Dated to the same period, late 17th century (see Plate 269).

CBW.37.3 – (1 Sherd) Low-quality group with a glassy glaze and bright-blue but rather diffuse decoration. Dated to the late 17th century (no illustration).

CBW.38 – (2 Sherds) Thin-walled vessels with gently-everted rims and a soft, off-white, cream glaze with black decoration, mostly on the exterior, comprised of simple flowing brush strokes, probably representing stylised characters. Dated to the 19th - 20th centuries (see Plate 270).

CBW.39 – (1 Sherd) Straight-sided cylindrical bottle with a shiny, pure-white glaze and bright-blue floral decoration. Dated to the 19th century (see Plate 271).

CBW.40 – (4 Sherds) Harsh, shiny, white glaze with slightly diffuse, very bright-blue stencil decoration. The decoration is comprised of composite motifs which include characters and flowers. Dated to the 19th - 20th centuries (see Plate 272).

CBW.41 – (11 Sherds) Coarse, slightly harsh, shiny glaze with lots of air-bubbles and diffuse, very bright blue decoration. All pieces have spiky petalled chrysanthemums included within the decoration. Dated to the 19th - 20th centuries (see Plate 273).

CBW.42 – (38 Sherds) Mostly green-grey or orange-grey, soft or harsh, glossy-glaze with distinctive decoration mostly on the exterior made up of many interconnected scrolls and strokes generally painted in dark-grey. Can also have a pure-white glaze with bright blue decoration. Difficult to date this class as it is still manufactured today. Could date to any time between the 17th - 20th centuries (see Plate 274).

CBW.43 – (4 Sherds) Off-white, slightly green-tinted, harsh, glossy glaze with diffuse, bright blue, very crudely painted decoration comprised of interconnected thick-lined scrolls. Dated to the 17th - 19th centuries (see Plate 275).

CBW.44 – (10 Sherds) Low-quality, greenish or orange-grey-tinted, harsh, glossy glaze with mostly diffuse, pale-blue or dark-grey decoration. The decoration is quickly painted in splodges and large flowers. Dated probably to the 18th century (see Plate 276).

CBW.45 – (117 Sherds) Very low-quality, thick-walled bowls fired in stacks on an unglazed stacking-ring on the interior of the vessel. The glaze is harsh, glossy and off-white, green or grey, with slightly diffuse, grey-painted decoration. The decoration is

crude and simple consisting of straight bands as well as some more complex non-figurative elements. The class, unlike the other CBW groups, was manufactured further south of the Jingdezhen area, the 19th - 20th centuries (see Plate 277).

Coherence: Individual sub-classes have been sorted based on a range of specific attributes and most are reasonably coherent although there are some that are not. For more details see individual class descriptions.

Decoration: See individual class descriptions.

Further Information: The chronological distribution of the CBW assemblage can be summarised as follows:

1) 14th century (AD 1320 - 1368), Yuan, very little material.
2) Late 14th - early 15th century (AD 1368 - 1435), Ming, no material.
3) Mid 15th century, very few, all high-quality, non-typical, Ming pieces.
4) Late 15th early 16th century (roughly to AD 1522), mostly poor Southeast Asian quality pieces, massive increase in production and export during this period.
5) Early to mid 16th century (overlaps with 6), same material as 4, some good-quality material but not as high-quality as pieces in the Topkapi Saray collection in Istanbul.
6) Late 16th - early 17th century (including Kraak style), the finer-quality material can be dated more precisely but lower-quality material is difficult to date closely. There appears to be a fair range of both high and low-quality material in the Collection.
7) Late Ming/Qing transition, on the whole not much material was exported during this period and mostly to Holland and Japan, but there is none of this material in the Collection.
8) Late 17th - Early 18th century (AD 1662 - 1722), Kangxi, only a small amount of this material is represented in the Collection.
9) 18th - 20th century, small, mostly poor quality assemblage.

It has been noted that there is a general absence of 14th - 15th century CBW in the Collection which is a period well represented by LQC (T. Sasaki & H. Sasaki, pers. comm. 2003). This is what one would expect to find in a Middle Eastern trade assemblage. At this time, CBW was a high-value commodity and only small quantities were exported from China. The fact that LQC is represented from this period is also to be expected. In fact the rise and decline of these wares were interrelated; once CBW came onto the market in quantity by around the middle of the 15th century, the quantity of LQC exported fell into rapid decline.

Another notable feature of the assemblage as a whole is the very extensive range and variety of material, including high and low-quality pieces represented in every period. Much of the low-quality material in the Collection is of a quality that has, up until now, only been recognised as occurring in South East Asia. It is generally thought that only higher-quality pieces were exported to the Middle East, however low quality material is also well represented in this assemblage. In some ways this Iranian assemblage could be seen as falling mid way between a 'typical' Middle Eastern and South East Asian assemblage.

Parallels and Dating: All dated to between the 14th - 20th centuries (spot dated, Krahl 04/09/2003).

Origin: Manufactured in the Jingdezhen apart from CBW.45 which was produced somewhere further south.

180. VBW.1-2 (Vietnamese Blue and White, Groups 1 & 2)

Fabric No: 75

Kennet Class: VIET.

Basis of Grouping: Glaze colour and decorative style.

Defining Characteristics: Opaque, cream coloured glaze with simple decoration painted in dark-grey or black.

VBW.1 – (3 Sherds) Degraded, sugary, creamy-white rather opaque glaze with simple flowing decoration on both the interior and exterior in grey/blue. Dated to the 14th century (see Plate 279).

VBW.2 – (4 Sherds) Thick, opaque, creamy-white glaze with simple, black, floral decoration. Date to the 15th or possibly the 16th century (see Plate 280).

Coherence: Both classes are distinctive and coherent.

Decoration: See individual class descriptions.

Parallels and Dating: See individual classes (spot dated, Krahl 04/09/2003).

Origin: Vietnam.

181. ENAM (Enamel Painted Porcelain)

Fabric No: 75 **Illustration:** Plate 278 **Number of Sherds:** 12

Kennet Class: ENAM.

Basis of Grouping: Decorative technique.

Defining Characteristics: Fine, pure-white body with a variable-quality glaze, over-painted with polychrome, enamel-painted decoration in red, yellow and green.

Coherence: Coherent and distinctive decorative technique

Decoration: The motifs are mostly floral. Some are very finely painted with detailed decoration including lattice-filled borders, while others are painted in a crude style.

Parallels and Dating: Dated to the later 16th century (spot dated, Krahl 04/09/2003).

Origin: Jingdezhen.

APPENDIX II - FABRIC CATALOGUE

Explanation

During the study of the pottery in the Williamson Collection a distinction was drawn between ceramic classes, which can be defined on the basis of a wide range of characteristics, such as surface treatment, vessel form, manufacturing technique etc, and the ceramic fabric, which relates only the fired clay matrix. Ceramic classes are described in Appendix I, and ceramic fabrics are described separately here in Appendix II. Each of the fabrics is numbered. The fabric numbers provide the primary point of cross-reference between the fabrics and the classes, with the corresponding fabric number appearing in each of the class descriptions given above and a list of the classes associated with each fabric listed in the fabric index below (Table 14).

A more detailed description of the process used to define a ceramic fabric has been given in the text above (p.50-51). Here it should be noted that while the sherds in each fabric groups share a number of attributes, many of these may be superficial and their relation, unlike a petrofabric, does not prove that all pieces derive from the same original production place. At the same time, and particularly when a fabric is distinctive and coherent, it may be possible to define the products of specific production centres by visual means alone. The primary function of the fabric descriptions is therefore to provide a guide to the visual identification of fabrics rather than to characterise them in any more exacting fashion. Below a skeleton record describes in more detail the principles behind each of the entries in the fabric catalogue (Fig. 40).

Skeleton Record

Fabric No: Fabric identification number.

Defining Characteristics: The main attributes that allow one to identify the fabric and distinguish it from others.

Specifications: A description of the fracture (the appearance and nature of a freshly broken section); feel (the feel of the broken section); sintering (the degree of melting the clay has undergone) and weight (specific density) of the fabric.

Core: Munsell colour chart reading from the core of the fabric section.

Margin: Munsell colour chart reading from the edge of the fabric section.

Surface: Munsell colour chart reading from the surface of the fabric.

Inclusions: Intrusive or added non-clay particles or voids in the fabric matrix discernable by eye or with the aid of 10x hand lens.

Colour	Size	Shape	Frequency	Sorting	ID
Colour of inclusion	Size range of inclusion in millimetres	Shape, e.g. rounded, angular, sub-angular etc.	% of the inclusion in the fabric matrix	Grain size variat-ion	Identification or description of the inclusion

Coherence: The extent of variability within the fabric group and whether it can be considered as a coherent entity, in other words the product of a single industry or manufacturing tradition.

Fig. 40 *Skeleton record explaining each of the headings in the fabric catalogue.*

FABRIC INDEX

Fabric	Associated Classes
1	SMAG.A, LISV.A, CLINKY
2	SMAG.B, LISV.B
3	SMAG.RC
4	SMAG.C
5	CLINKY
6	LISV.FI
7	FIG, FIG.LV, CORD, REL.LV
8	FINT, FINT.LV, FINT.B
9	GRIT, GRIT.LV, CORD, REL.LV
10	GROG, GROG.LV
11	ORG.H
12	ORG.I
13	ORG.S, ORG.HS
14	VITFIG
15	LAG
16	CORVIT
17	LIME
18	WSUQ
19	PAW.FC, PAW.LV
20	PAW.FO, PAW.LV
21	PAW.CC
22	PAW.SCY
23	PAW.RB
24	PAW.BLR
25	PAW.SCC
26	PAW.BST
27	GIB
28	REBLAB
29	PAW.SA
30	PAW.ORG
31	CHAM.1
32	CHAM.2
33	CHAM.3
34	JUL, JUL.PB, JUL.RW
35	JUL.RC
36	SWIS
37	SHABUR.A
38	SHABUR.B
39	PAW.HC
40	HONEY, TORP.1, TRC.1
41	TORP.2
42	TORP.3, TRC.2
43	TORP.4
44	SLIP.B
45	SLIP.TB
46	SLIP.PBR, SLIP.R
47	ALK.1-3
48	ALK.RC
49	MEW.LG, MEW.MO
50	MEW.DG
51	MEW.O, MEW.MO
52	MEW.BR, MEW.MO
53	MEW.C, MEW.MO
54	MEW.CC, MEW.MO
55	TIN.B, TIN.CT, TIN.ML, TIN.N-ID, TIN.PL, TIN.T, TIN.TBS, TIN.W1, TIN.T

56	TIN.W2
57	SPW.BG, SPW.BW, SPW.N-ID, SPW.YB
58	FRIT.B, FRIT,BL, FRIT.BW, FRIT.DEG, FRIT.EI, FRIT.G, FRIT.GW, FRIT.IT, FRIT.IW, FRIT.L, FRIT.MT, FRIT.MW, FRIT.P, FRIT.T, FRIT.TB, FRIT.TBU, FRIT.W
59	FRIT.TB
60	FOPW.1, FOPW.4
61	FOPW.2, FOPW.4
62	FOPW.3
63	IRPW
64	IRAB
65	SBBW
66	SPL.L
67	MTB.1
68	MTB.2
69	DAB
70	LIB
71	WINC
72	INCIMP
73	REDYEL
74	CREAM
75	CBW.1-45, VBW.1-2, ENAM, QING.1-2, WW.0-5, WWG.1-2, WWJ.1-4, WWS.1-10
76	LQC.1-4, JDC, GDC.4
77	GDC.1-3, WWG.3
78	CHANG
79	DEH.1-2, WWF
80	WWSL
81	STO.GRY
82	STO.BUR
83	STO.THAI
84	SPL.GW, SPL.P
85	SPL.GW, SPL.P
86	GWSG

Table 14 *Index of Fabric groups and their associated classes.*

Fabric No: 1

Associated Class(es): SMAG.A, LISV.A, CLINKY

Defining Characteristics: Hard, well-sintered earthenware with a tight, slightly metallic surface with frequent lime spalling leaving voids in the surface surrounded by a yellow halo. The body is predominantly dark grey, black or red with a lighter core. Broken sections are often freckled with yellow and contain frequent dark red or grey, shiny platelets.

Specifications: Dense and compact with a smooth, soapy feel and irregular, slightly laminar fracture.

Core: Dusky red (10R 3/2 - 4/8)

Margin: Dark reddish grey (10R 4/1) or red (10R 4/6)

Surface: Black (2.5/N) or red (10R 5/6)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	2.5Y 8/6	<0.5 - 5mm	Rounded or void	3 - 5%	Poor	Lime
2	10R 4/6	<0.5 - 2mm	Platelets	3 - 7%	Fair	Shiny dark red/grey platelets

Coherence: Generally coherent although the colour range is fairly extensive. Reduced grey tones appear to be more common on smaller vessels while oxidised reds are more common on larger vessels.

Fabric No: 2

Associated Class(es): SMAG.B, LISV.B

Defining Characteristics: Hard, tightly-fired earthenware, similar to Fabric 1, accept that it is consistently reduced to grey with a distinctive dull 'dry' appearance and less obvious lime spalling. Where there is lime spalling it is not accompanied by yellow halos. The fabric is often speckled with medium-sized, white lime inclusions and the same dark red or grey shiny platelets as Fabric 1. Overall, the fabric has a less melted metallic feel than Fabric 1.

Specifications: Compact and medium density with a gritty feel and an irregular fracture.

Core: Red (10R 5/6) or grey (5/N)

Margin: Grey (5/N)

Surface: Grey (5/N), dark grey (4/N) or pale brown (10YR 6/3)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	2.5YR 8/2	<0.5 - 3mm	Rounded	<3 - 7%	Good	Lime
2	2.5YR 4/6 - 5/1	<0.5 - 1.5mm	Platelets	<3%	Poor	Dark red/grey shiny platelets

Coherence: Reasonably coherent though sometimes the distinction between Fabric 1 and 2 is difficult to maintain. Examples of LISV in Fabric 2 are also less consistent than the smaller vessels.

Fabric No: 3

Associated Class(es): SMAG.RC

Defining Characteristics: Hard, 'dry'-looking earthenware with coarse, sub-angular, shiny black platelets (especially frequent in larger vessels) and creamy-white, lime inclusions. Spalling voids often occur but never with yellow halos as seen in Fabric 1.

Specifications: Granular and compact, average weight with a rough feel and an irregular, slightly laminar fracture.

Core: Brown (10YR 5/3), week red (10R 5/3) or very pale brown (10YR 8/3)

Margin: Brown (10YR 5/3), greyish brown (10YR 5/2) or very pale brown (10YR 8/3)

Surface: Pale brown (10YR 6/3), light brownish grey (10YR 6/2) or very pale brown (10YR 8/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Pale brown	<0.5 - 3mm	Sub-rounded	0 - 5%	Poor	Lime
2	Dark brown	<0.5 - 5mm	Angular platelets	0 - 5%	Poor	Shiny brown platelets
3	Voids	0.5 - 5mm	rounded	0 - 5%	Fair	Lime spalling

Coherence: The fabric occupies a position somewhere mid-way between and Fabrics 1, 2 and 4.

Fabric No: 4

Associated Class(es): SMAG.C

Defining Characteristics: Fine, tightly-fired, brittle, cream or light grey earthenware. Under the hand lens it is possible to discern a range of distinctive inclusions, including very occasional red flecks.

Specifications: Compact, average density with a smooth soapy feel and a fine fracture.

Core: Light grey (2.5Y 7/1) or pale brown (10R 6/4)

Margin: Light grey (2.5Y 7/1) or pale brown (10R 6/4)

Surface: Dark grey (4/N) or pink (7.5YR 7/3)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	2.5/10Y	<0.5 - 2mm	Angular platelets	<3 - 5%	V. poor	Black flaky material
2	2.5Y 7/1	<0.5 - 1mm	Sub-angular	≤3%	Poor	Cream coloured flakes
3	5YR 6/8	0.5 - 2mm	Sub-rounded	<3%	Fair	Grog
4	2.5Y 8/3	≤0.5mm	Sub-rounded	<3%	Good	Lime?

Coherence: Small but very coherent group that is clearly distinct and easily distinguishable from the other SMAG fabrics; Fabrics 1, 2 and 3.

Fabric No: 5

Associated Class(es): CLINKY

Defining Characteristics: Fine, hard, well-sintered earthenware which is well -evigated giving it a smooth appearance. Most pieces are thoroughly oxidised, though some have a thin grey surface layer caused by late firing reduction.

Specifications: Compact, average density with a smooth feel and fine, slightly irregular fracture.

Core: Red (10R 5/6) or grey (5Y 6/1)

Margin: Red (10R 5/6) or grey (5Y 6/1)

Surface: Red (2.5YR 6/8) or brown (7.5YR 5/2)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	10YR 8/2	<0.5 - 3mm	Sun-rounded	<3%	Poor	Lime
2	10YR 3/1	<0.5 - 1mm	Sub-angular	≤3%	Good	Shiny red/black platelets

Coherence: Very coherent, though there is some variation in the frequency and nature of coarse inclusions. The fabric is also very similar to Fabric 1, the main difference being that it is generally slightly finer and not as heavily sintered.

Fabric No: 6

Associated Class(es): LISV.FI

Defining Characteristics: Fine, dense, slightly 'dry' looking earthenware. Some pieces have a fine vegetal temper, visible as burned-out voids. Under the hand lens the fabric appears dusty and has fine, variable, sandy inclusions.

Specifications: Compact, dense to average in weight with a smooth feel and an irregular to fine fracture.

Core: Light reddish brown (5YR 6/4)

Margin: Light reddish brown (5YR 6/4)

Surface: Light reddish brown (5YR 6/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	6/10B	<0.5 - 1mm	rounded	≤3%	Fair	Hard grey grains
2	7.5YR 8/2	<0.5mm	rounded	0 - <3%	V. good	Quartz?
3	10R	≤0.5mm	angular	0 - <3%	Good	Hard shiny red flecks
4	Voids	1 - 3mm	Long and thin	0 - 3%	Poor	Organic temper voids

Coherence: There are clearly a number of different fabrics represented within the group and although they appear closely related, the inclusions vary, particularly when viewed under the hand lens. Unlike the other fabrics associated with LISV, this fabric is not represented on small non-LISV vessels as well.

Fabric No: 7

Associated Class(es): FIG, FIG.LV, CORD, REL.LV

Defining Characteristics: Fine, tight, fully-oxidised earthenware with large quantities of fine, well-sorted sandy inclusions comprised largely of black grits but also including a range of other elements of which rounded quartz grains are the most distinctive.

Specifications: Compact, granular structure, average density with a gritty feel and a fine irregular fracture.

Core: Light yellowish brown (10YR 6/4) to red (2.5YR 6/6)

Margin: Light yellowish brown (10YR 6/4) to red (2.5YR 6/6)

Surface: Very pale brown (10YR 7/3) to red (2.5YR 6/6)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	3/N	0.4 - 1mm	Sub-rounded	3%	V. good	Rounded black grits
2	10R 4 /8	0.2 - 0.5mm	Sub-rounded	0 - 2%	V. good	Hard rounded red stone
3	10R 8/2	0.2 - 0.5mm	rounded	2%	V. good	Rounded quartz grains

Coherence: Coherent fabric used across a wide range of vessel forms, although it can be difficult to consistently differentiate Fabrics 7, 8 and 9.

Fabric No: 8

Associated Class(es): FINT, FINT.LV, FINT.B

Defining Characteristics: Hard, fine earthenware with almost no visible inclusions, fired to an even oxidised creamy white, pink or orange. A few pieces have a slightly rougher texture, with some grit and these pieces tend to be partially reduced to grey.

Specifications: Compact, average density with a gritty feel and a fine irregular or sub-conchoidal fracture.

Core: Pink (7.5YR 7/4), week red (2.5YR 6/4) or dark grey (4/N)

Margin: Pink (7.5YR 7/4), week red (2.5YR 6/4) or dark grey (4/N)

Surface: Pale yellow (2.5Y 8/2), pink (7.5YR 7/4) or grey (2.5Y 5/1)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	3/N	<0.5 - 1mm	Sub-angular	0 - 1%	Fair	Fine black grit
2	8/N	<0.2 - 1mm	Sub-rounded	0 - 2%	Good	Quartz

Coherence: Generally coherent, although those pieces with grits can to be difficult to distinguish from Fabrics 7 and 9.

Fabric No: 9

Associated Class(es): GRIT, GRIT.LV, CORD, REL.LV

Defining Characteristics: Dense, predominantly oxidised earthenware fired to cream, orange, red or sometimes grey and containing frequent, large, badly-sorted grits.

Specifications: Very dense with a compact, granular structure, a harsh feel and a hackly fracture.

Core: Very pale brown (10YR 7.5-4), red (2.5 YR 6/6), red (10R 5/6) or light grey (2.5Y 7/1)

Margin: Same as core

Surface: Very pale brown (10YR 7.5-4), red (2.5 YR 6/6), pale red (10R 5.5/4) or light grey (2.5Y 7/1)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	4/10B	0.5 - 3.5mm	Rounded	3 - 10%	V. poor	Hard black stone grit
2	10R 3/6	0.5 - 2mm	Sub-angular	0 - 5 %	Poor	Hard red stone grit
3	5YR 7/3	0.5 - 4mm	Rounded	0 - 3%	Poor	Soft white ?lime
4	5YR 8/1	0.5 - 1mm	Angular	0 - <1%	Fair	Quartz

Coherence: Coherent in terms of the density of the fabric and the presence of large, badly-sorted grits. This may be superficial however and the extensive colour variation coupled with

variations in the nature of coarse inclusions and the wide range of forms represented in the fabric suggest that in fact the fabric requires further sub-division.

Fabric No: 10

Associated Class(es): GROG, GROG.LV

Defining Characteristics: A hard, chalky earthenware which is often fairly dense with minor or major pitting on the surface and a brick-red grog or stone temper that shows up clearly against the oxidised orange of white fabric. A few heavier vessels have darker cores.

Specifications: Dense and compact with a rough feel and an irregular fracture.

Core: Pink (7.5YR 7.5/3), pink (5YR 7/4) or brown (7.5YR 5/2.5)

Margin: Pink (7.5YR 7.5/3), pink (5YR 7/4) or red (10R 5/6)

Surface: Pink (7.5YR 7.5/3), pale yellow (2.5Y 8/2) or light reddish brown (5YR 6/3)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	10R 5/6	<0.5 - 2.5mm	Sub-rounded	1 - 10%	Poor	Grog or red stone
2	2.5YR 2.5/1	0.25 - 2.5mm	Sub-rounded	0 - 10%	Poor	Black grit

Coherence: Very coherent fabric that remains consistent across both larger and smaller vessels.

Fabric No: 11

Associated Class(es): ORG.H

Defining Characteristics: Very hard, heavily-sintered, consistently-oxidised earthenware with numerous, short, fibrous voids caused by the burning out of an organic temper. The colour of the fabric is mostly orange, though some over-fired examples appear slightly green.

Specifications: Dense to average in weight with a compact structure, a rough feel and an irregular fracture.

Core: Pale red (2.5YR 7.5/4), red (10R 5/6) or dark grey (4/N)

Margin: Same as core

Surface: Pink (7.5YR 7/3), red (10R 5/6) or brown (7.5YR 5.5/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	3/N	<0.5 - 4mm	Rounded	0 - 3%	Poor or good	Black stone grit
2	8/N	0.4 - 1mm	Sub-rounded	0 - 3%	Good	Quartz
3	Voids	<0.5 - 3.5mm	Elongated	3 - 15%	Poor	Chaff temper

Coherence: There is some variability in the frequency of the organic inclusions and the hardness of the fabric. The distinction between Fabrics 11 and 12 can also be difficult to maintain as it depends only on the hardness of the material. There is also some variability in the coarse inclusions with three distinct versions discernable: 1) almost no inclusions apart from occasional (c.1%) black grits; 2) frequent (3%), badly-sorted black grits; 3) fine, well-sorted grit and quartz inclusions similar to Fabric 7 but with an organic component.

Fabric No: 12

Associated Class(es): ORG.I

Defining Characteristics: Moderately soft, chalky-textured earthenware with burned-out strands and flecks of organic temper. The fabric is mostly oxidised to an even orange though a few pieces have a darker core. A few harder pieces are also included within the group that do not have a chalky texture.

Specifications: Average density with a compact structure a gritty feel and an irregular fracture.

Core: Week red (2.5YR 6/4) or grey (10YR 5/1)

Margin: Week red (2.5YR 6/4) or pale red (10R 6/4)

Surface: Pink (7.5YR 7.5/4) or light red (2.5YR 6.5/7)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	10R 2.5/1	<0.5 - 3mm	Sun-rounded	0 - 10%	Good or poor	Black stone grits
2	Voids	0.5 - 3mm	Elongated	2 - 7%	Fair	Organic temper

Coherence: There are strong similarities between Fabrics 11, 12 and 13. Fabric 12 occupies a position somewhere between the two better defined Fabrics 11 and 13.

Fabric No: 13

Associated Class(es): ORG.S, ORG.HS

Defining Characteristics: Soft, porous, usually cream coloured earthenware with a chalky texture and large, fibrous, burned-out organic inclusions. Usually the material has a low specific density, though the handmade material tends to he heavier and is also softer and more coarsely tempered.

Specifications: Light and porous with a soft feel and a hackly fracture.

Core: Pale yellow (2.5Y 8/3) or pink (5YR 7/4)

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Voids	0.5 - 7mm	Elongated	3 - 15%	Poor	Organic temper

Coherence: Generally coherent, although there is some overlap with Fabric 12.

Fabric No: 14

Associated Class(es): VITFIG

Defining Characteristics: Finely-gritted, semi-vitrified earthenware usually fired to a pinkish-red but also appears in darker, heavily-sintered grey and cream versions with dark cores. The surfaces are fine and lumpy with a soapy texture. At one extreme the material appears slightly bloated, at the other the material appears evenly sintered, light in colour and only slightly vitrified.

Specifications: Dense and semi-vitrified with a rough but slightly soapy texture and a hackly fracture.

Core: Pale red (10R 6/4), pink (7.5YR 7/3) or dark grey (4/N)

Margin: Same as core

Surface: Week red (2.5YR 6/4) or pale yellow (2.5Y 8/2)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	4/N	0.5 - 1mm	Well-rounded	3%	Good	Black stone grit
2	10R 4/4	0.3 - 1mm	Well-rounded	<3%	Good	Red stone grit
3	10R 8/2	0.4 - 0.6mm	Well-rounded	3 - 7%	V. good	Rounded quartz

Coherence: Very coherent.

Fabric No: 15

Associated Class(es): LAG

Defining Characteristics: Extremely dense and heavy earthenware with frequent large, worn and slightly-rounded grits that protrude through the surface. The fabric has a dull, reddish-orange surface that darkens towards the core, sometimes to dark grey.

Specifications: Very dense and compact with a soft gritty feel and an irregular fracture.

Core: Dark reddish grey (10R 4/1) or black (2.5/N)

Margin: Red (2.5YR 5/6) or light reddish brown (5YR 6/3)

Surface: Red (10R 5/6) or light reddish brown (5YR 6/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	6/10B	0.5 - 4mm	Sub-rounded	3 - 5%	Fair	Grey stone grit
2	8/N	<0.5 - 5mm	Sun-rounded	3 - 7%	Poor	Quartz-like stone grit

Coherence: Very coherent.

Fabric No: 16

Associated Class(es): CORVIT

Defining Characteristics: Dense, semi-vitrified, possibly over-fired earthenware with deep bubbles and pits in the core. The colour is a consistent reddish-orange from the core through to the surface. Similar to Fabric 14 except that it is much coarser with less fine grit.

Specifications: Dense and semi-vitrified with a harsh feel and a hackly fracture.

Core: Light red (2.5YR 6.5/6)

Margin: Same as core

Surface: Pale red (2.5YR 6.5/5)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	10R 7/4	≤0.5mm	rounded	5 - 7%	V. good	Quartz like grains
2	10R 3/2	≤0.5mm	Rounded	3%	V. good	Dark stone grains

Coherence: All examples are so similar that they may be from the same vessel. Certainly they are from the same production.

Fabric No: 17

Associated Class(es): LIME

Defining Characteristics: Very hard and dense, semi-vitrified, tan-yellow earthenware with frequent, large, sub-rounded lime inclusions speckling the core and surface.

Specifications: Dense and semi-vitrified with a compact and granular structure, a rough feel and a slightly irregular fracture.

Core: Light brown/pink (7.5YR 6.5/3)

Margin: Light reddish brown (5YR 6.5/3)

Surface: Same as margin

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	10YR 8/1	0.25 - 6mm	Sub-rounded	5 - 20%	Poor	Lime
2	10R 7/3	0.5 - 1mm	Rounded	3%	V. good	Quartz grains

Coherence: Coherent and distinctive, but with some variation in the frequency of lime inclusions.

Fabric No: 18

Associated Class(es): WSUQ

Defining Characteristics: Hard, dense earthenware with a chalky texture. The core tends to be blue-grey with brighter orange margins and a buff-yellow surface. The material has a fine, medium-frequency grit temper and small voids that suggest an infrequent organic component to the temper.

Specifications: Very dense and compact with a soft feel and an irregular fracture.

Core: Greenish-blue grey (6/5B)

Margin: Red (2.5YR 6/8) or pink (5YR 7/4)

Surface: very pale brown/yellow (10YR 8/3.5)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	2.5/N	0.25 - 1mm	Sub-rounded	3%	V. good	Fine black grit
2	10R 3/6	0.25 - 1mm	Sub-angular	3%	V. good	Fine red grit
3	10R 8/2	0.25 - 1mm	Well rounded	1%	V. good	Fine rolled quartz
4	Voids	0.5 - 2mm	Rounded or elongated	3 - 5%	Poor	Bubbles & organic temper

Coherence: Small sample but the material is distinctive.

Fabric No: 19

Associated Class(es): PAW.FC, PAW.LV

Defining Characteristics: Very finely-levigated, creamy-yellow earthenware with no visible inclusions or with small, readily-discernable red inclusions. The material is evenly fired and fully oxidised with a tight structure, a clean facture and a soft, soapy texture, which is enhanced by a fine slip applied to the surface.

Specifications: Average density with a compact structure, a smooth and soapy feel and a fine clean fracture.

Core: Pale yellow (2.5Y 8/2) or light red (2.5YR 7/6)

Margin: Pale yellow (2.5Y 8/2) or pink (7.5YR 7/5)

Surface: Pale yellow (2.5Y 8/2) or very pale brown (10YR 8/2)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	2.5YR 5/6	0.5 - 5mm	Sub-rounded	≤3%	Fair	Grog?

Coherence: There may be grounds for sub-dividing this into two fabrics on the basis of the small red inclusions.

Fabric No: 20

Associated Class(es): PAW.FO, PAW.LV

Defining Characteristics: Finely-levigated, hard-fired, evenly-oxidised, light-orange earthenware with no visible inclusions and a soft, soapy texture. The fabric is similar to Fabric 19 but the colour is orange and there are no examples with red grog temper.

Specifications: Average density with a compact structure, a smooth and soapy feel and a fine clean fracture.

Core: Reddish Yellow (5YR 6/6)

Margin: Same as core

Surface: Pink (5YR 7/4)

Coherence: Very coherent.

Fabric No: 21

Associated Class(es): PAW.CC

Defining Characteristics: Hard, tightly-fired earthenware with advanced sintering, though it still feels soft and soapy. The fabric has variable levels of well-sorted homogenous black or dark reddish-black grits (probably the same material but fired to different colours). The body is generally fired to a light creamy orange or grey/green, mainly within a consistent oxidised range.

Specifications: Average density with a compact granular structure, a slightly rough, soapy feel and an irregular fracture.

Core: Pale yellow (2.5Y 8/1), reddish-yellow (5YR 6/6) or greyish-brown (10YR 5.5/2)

Margin: Pale yellow (2.5Y 8/1), reddish-yellow (5YR 6/7) or greyish-brown (10YR 5.5/2)

Surface: Pale yellow (2.5Y 8/1), pinkish-yellow (7.5YR 7/5) or light grey (10R 7/2)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	5YR 4/1 or 10R 5/6	<0.5 - 2mm	Sub-angular	<1 - 5%	Fair	Red or black grit

Coherence: There is some overlap between Fabrics 19, 21 and 22, but when seen together they are easy to distinguish.

Fabric No: 22

Associated Class(es): PAW.SCY

Defining Characteristics: Soft, chalky textured, bright yellowish-orange earthenware with no visible inclusions but a fine porous structure.

Specifications: Dense to average weight with a soft porous structure, a soft, soapy feel and a fine fracture.

Core: Yellow (10YR 7.5/4) or pale yellow (2.5Y 8/4)

Margin: Same as core

Surface: Yellow (10YR 8/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Voids	<0.25mm	Rounded	20%	Fair	Bubbles

Coherence: Coherent group.

Fabric No: 23

Associated Class(es): PAW.RB

Defining Characteristics: Coarse, hard, compact and brittle, deep reddish-brown earthenware. The broken section has a distinctive 'blocky' fracture that makes the fabric appear as though it has a coarse grit temper, although none is actually visible.

Specifications: Average density with a compact granular structure, a rough feel and an irregular fracture.

Core: Red (2.5YR 5/6)

Margin: Same as core

Surface: Red (2.5YR 6/6)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	2.5YR 5/4	<0.5 - 1mm	Angular	≤3%	Fair	Hard angular rose coloured grit
2	10R 3/1	≤0.5mm	Sub-angular	≤3%	Good	Hard black grit

Coherence: Coherent group.

Fabric No: 24

Associated Class(es): PAW.BLR

Defining Characteristics: Very fine, well-levigated, hard, compact and well-sintered orange earthenware with no visible inclusions.

Specifications: Light weight with a compact structure, a smooth feel and a clean fracture.

Core: Pink (5YR 7/4)

Margin: Same as core

Surface: Same as core

Coherence: Small sample but coherent.

Fabric No: 25

Associated Class(es): PAW.SCC

Defining Characteristics: Heavily-gritted, soft, friable, creamy-yellow earthenware with a loose, granular structure.

Specifications: Dense in weight with a loose, granular structure, a gritty feel and an irregular fracture.

Core: Pink (7.5YR 7/4)

Margin: Same as core

Surface: Very pale brown (10YR 8/3)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	8-4/N	0.5 - 1mm	Angular	7 - 10%	Good	Light & dark quartz

Coherence: Some variability in the hardness and frequency of grits, though generally coherent.

Fabric No: 26

Associated Class(es): PAW.BST

Defining Characteristics: Hard, brittle, fawn-brown earthenware with abundant graded angular stone grit inclusions, and in some cases fragments of lime.

Specifications: Average to dense in weight with a granular structure, a harsh feel and a hackly fracture.

Core: Yellowish red (5YR 5/6) or dark grey (5YR 4/1)

Margin: Same as core

Surface: Light reddish brown (5YR 6/3-4) or reddish yellow (7.5YR 6.5/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	2.5YR 5/1-3	0.25 - 3mm	Angular	5 - 15%	Fair	Angular stone grits
2	8/N or 10YR 8/2	0.5 - 3mm	Sub-rounded	0 - 2%	Fair	Lime

Coherence: Very homogenous.

Fabric No: 27

Associated Class(es): GIB

Defining Characteristics: Dense, fine, gritty textured earthenware, which tends to be fired to a rusty orange or brown with a dark core. Small white inclusions are visible on the surface.

Specifications: Dense in weight with a compact but slightly porous structure, a gritty feel and an irregular fracture.

Core: Brown (7.5YR 4/4) or very dark grey (7.5YR 3/1)

Margin: Strong brown (7.5YR 5/8) or brown (7.5YR 4/4)

Surface: Light brown (7.5YR 6/3) or red (10R 4.5/6)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	7/N	<0.5 - 1mm	Sub-rounded	7 - 10%	Good	Quartz grains

Coherence: Coherent group.

Fabric No: 28

Associated Class(es): REBLAB

Defining Characteristics: Crude, low-fired earthenware with a grey or black core and a hard, laminar and slightly brittle structure and no visible inclusions.

Specifications: Average to light in weight with a compact structure, a rough feel and a laminar fracture.

Core: Bluish black (2.5/1 5PB) or light brownish grey (2.5Y 6/2)

Margin: Dusky red (2.5YR 4/2) or light brown (7.5YR 6/4)

Surface: Yellowish red (5YR 5/6) or dark grey (7.5YR 4/1)

Coherence: Coherent group.

Fabric No: 29

Associated Class(es): PAW.SA

Defining Characteristics: Hard, slightly flaky, buff-orange earthenware with a sandy texture and no visible inclusions.

Specifications: Average weight with a compact, granular structure, a gritty feel and a clean fracture.

Core: Light brown (7.5YR 6/4)

Margin: Same as core

Surface: Pink (7.5YR 7/3)

Coherence: Coherent group.

Fabric No: 30

Associated Class(es): PAW.ORG

Defining Characteristics: Soft and chalky or hard and porous, cream or orange earthenware with occasional coarse inclusions and frequent elongated voids left by burned-out organic temper.

Specifications: Average weight with a loose structure, a soapy feel and a fine irregular fracture.

Core: Pale yellow (5Y 7.5/2) or week red (2.5YR 5.5/4)

Margin: Same as core

Surface: Pale yellow (5Y 7.5/2) or pale yellow (2.5Y 8/3)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	2.5/N	0.25 - 1mm	Sub-rounded	0 - 1%	Good	Black stone grits
2	Voids	0.5 - 6mm	Elongated	7 - 15%	Poor	Organic temper

Coherence: Reasonably coherent. Similar to Fabric 13.

Fabric No: 31

Associated Class(es): CHAM.1

Defining Characteristics: A very crude, heavily-gritted, low-fired earthenware. The colour range is light cream or orange with no reduction in the core. The fabric is fairly soft and crumbly, though it cannot be scratched with the finger nail.

Specifications: Dense in weight with a loose, brittle structure, a harsh feel and an irregular fracture.

Core: Light reddish brown (5YR 6/4) or reddish yellow (5YR 6/6)

Margin: Pink (7.5YR 7/4) or reddish yellow (5YR 6/6)

Surface: Very pale brown (10YR 8/3) or light reddish brown (5YR 6.5/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	2.5YR 2.5/1 or 2.5YR 6/8	0.25 - 4mm	Angular or sub-angular	5 - 30%	Fair	Red or black stone grits

Coherence: Some variability in the colour, frequency, size and sorting of the grit inclusions, but the colour at least is probably influenced primarily by firing conditions. The fabric bears a strong resemblance to Fabric 9.

Fabric No: 32

Associated Class(es): CHAM.2

Defining Characteristics: Very crude, low-fired, orange or cream earthenware with no, or very few, coarse inclusions. Where there are coarse inclusions the grit size is often large. The fabric can be reasonably light and is rather fragile and crumbly.

Specifications: Dense to average weight with a soft, loose structure, a rough feel and an irregular fracture.

Core: Light reddish brown (5YR 6/4) or reddish yellow (5YR 6/6)

Margin: Pink (7.5YR 7/4) or reddish yellow (5YR 6/6)

Surface: Very pale brown (10YR 8/3) or light reddish brown (5YR 6.5/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	2.5YR 2.5/1	0.25 - 4mm	Angular	0 - 5%	Fair	Black stone grit

Coherence: The distinction between Fabrics 31 and 32 depends almost entirely on the level of grit inclusions. Between Fabrics 32 and 33 the main distinction is the hardness. None of these divisions is absolute and all three fabrics are closely related.

Fabric No: 33

Associated Class(es): CHAM.3

Defining Characteristics: Hard, fairly well sintered, pale-orange earthenware with frequent variations in the firing colour between the core, margin and surface. In some cases the surfaces can appear patchy with some fire clouding.

Specifications: Average weight with a loose but hard structure, a rough feel and an irregular fracture.

Core: Grey (5/N) or red (10R 5/6)

Margin: Yellowish red (5YR 5.5/6) or red (10R 5/6)

Surface: Very pale brown (10YR 7/3) or light reddish brown (5YR 6/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	4/N	0.25 - 2mm	Angular	0 - 3%	Fair	Grey/black stone grit

Coherence: Generally coherent although there is some variation. Also similar to, but slightly harder than Fabric 32.

Fabric No: 34

Associated Class(es): JUL, JUL.PB, JUL.RW

Defining Characteristics: Brittle, grainy earthenware fired to brick-red or dark-grey with frequent, small (0.5 – 2mm), sub-angular, badly-sorted, opaque-red or grey platelets. Some pieces are also flecked with small spots of lime which can be frequent.

Specifications: Light to average weight with a compact granular structure, a gritty feel and an irregular laminar fracture.

Core: Red (2.5YR 5.5-6), dark grey (7.5YR 4/1) or red (10R 4.5/6)

Margin: Same as core

Surface: Weak red (2.5YR 5/4), dark grey (4.5/N) or dark reddish grey (2.5YR 4/1)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	10R 4/6 or 10R 3/1	0.5 - 2mm	Sub-angular platelets	3 - 10%	Poor or fair	Red/black platelets
2	5YR 8/1	<0.5 - 2mm	Sub0rounded	0 - 2%	Fair	Lime flecks

Coherence: The fabric is consistent apart from the variable levels of lime. Also one of the forms (JU: 01), appears to display a slightly different fabric that is mottled with black, dark grey, red and white inclusions including the common platelets and lime as well as some other elements.

Fabric No: 35

Associated Class(es): JUL.RC

Defining Characteristics: A coarse red earthenware similar to the grainy Julfar fabric (Fabric 34), but with fewer visible red platelets, more white speckling and a much finer, tighter, harder and more sintered appearance.

Specifications: Average weight with a compact, granular structure, a rough and slightly soapy feel and a fine, irregular, laminar fracture.

Core: Red (10R 4/8)

Margin: Same as core

Surface: Dark grey (4.5/N) or red (2.5YR 5/6)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	10R 4/4 or 3/2	0.5 - 1mm	Sub-angular	3 - 5%	Fair	Red/grey platelets
2	5YR 8/1	<0.5 - 2mm	Sub-rounded	1 - 3%	Fair	Lime flecks

Coherence: The fabric is very consistent across a number of different forms. Of all the Julfar fabrics, this one is the closest to JUL.PB and the furthest from JUL.RW.

Fabric No: 36

Associated Class(es): SWIS

Defining Characteristics: Brittle, grey earthenware with variable levels of white lime flecks and sometimes with dark red platelets.

Specifications: Light in weight with a loose, granular structure, a gritty feel and a fine, irregular, laminar fracture.

Core: Very dark grey (3/N)

Margin: Same as core

Surface: Dark grey (4.5/N)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	7.5YR 8/1	<0.5 - 4mm	Rounded	0 - 3%	Poor	Lime flecks
2	10R 3/4	1 - 5mm	Flat platelets	0 - 7%	Fair	Dark red platelets

Coherence: The version of the fabric with dark red platelets seems only to occur with form SW: 01, which comes only from coastal sites, however not all examples of SW: 01 have these inclusions.

Fabric No: 37

Associated Class(es): SHABUR.A

Defining Characteristics: Finely-levigated, creamy-yellow earthenware with a hard, dense consistency. The fabric is similar to Fabric 19 but less soft and more waxy with no visible inclusions and a darker appearance.

Specifications: Average weight with a compact structure, a smooth soapy feel and a clean sub-conchoidal fracture.

Core: Pale yellow (2.5Y 8/2-3)

Margin: Same as core

Surface: Same as core

Coherence: Coherent group.

Fabric No: 38

Associated Class(es): SHABUR.B

Defining Characteristics: Finely-levigated, orange earthenware with a hard, dense consistency. The fabric is almost identical to Fabric 37 except that it is orange. The fabric is also the same as Fabric 20 but tends be less soft and to have a more waxy feel.

Specifications: Average weight with a compact structure and a smooth, soapy feel and a clean, sub-conchoidal fracture.

Core: Reddish yellow (5YR 6/6)

Margin: Same as core

Surface: Pink (5YR 7/4)

Coherence: Coherent group.

Fabric No: 39

Associated Class(es): PAW.HC

Defining Characteristics: A group of hard, creamy-yellow earthenwares within which there are at least four discernable varieties. 1) no visible inclusions and a fine flaky fracture; 2) fine flaky, slightly dusty fracture with small quartz grains; 3) hard texture with small lime flecks; 4) granular structure with fine air bubbles and small black grits.

Specifications: Average weight with a compact granular structure, a light gritty feel and a fine, clean fracture.

Core: Pale yellow (2.5Y 7/3-4) or pink (5YR 7/4)

Margin: Pale yellow (2.5Y 7/3-4) or pink (5YR 7/3)

Surface: Very pale brown (10YR 7/3.5) or pale yellow (2.5Y 8/3)

Coherence: A collection fabrics that look similar but with slight differences in structure and coarse inclusions.

Fabric No: 40

Associated Class(es): HONEY, TORP.1, TRC.1

Defining Characteristics: Hard, light-yellow, fine, sandy earthenware. Under the hand lens, many small voids are visible together with very small, red flecks that are only just visible. A second version of the fabric is similar but with more black sandy elements.

Specifications: Average weight with a compact granular and slightly porous structure, a fine gritty feel and a fine irregular fracture.

Core: Pale yellow (2.5Y 7/4) or light yellowish brown (2.5Y 6/3)

Margin: Same as core

Surface: Light grey (2.5Y 7/2) or pale yellow (2.5Y 7/3)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Brick red	0.1mm	Sub-angular	0 - 5%	Good	Red flecks
2	Black	0.1 - 0.5mm	Sub-angular	0 - 5%	Good	Black grit
3	White	0.25mm	Rounded	0 - 5%	V. good	Quartz grains

Coherence: The HONEY fabric is coherent. In TORP.1 and TRC.1 the fabric is very similar but with slightly more sandy inclusions, in particular inclusions 2 and 3 (above).

Fabric No: 41

Associated Class(es): TORP.2

Defining Characteristics: Friable, sandy-textured earthenware with a creamy-white surface and buff core and margin. Under the hand lens, abundant, small, fairly well-sorted, mixed grains are visible. Quartz grains tend to be rounded and opaque white, while other elements tend to be more angular and are dominated by black grits.

Specifications: Average to dense in weight with a slightly porous granular structure, a rough gritty feel and a fine irregular fracture.

Core: Light brownish-pink (7.5YR 6.5/4)

Margin: Same as core

Surface: Pale yellow (2.5Y 8/3) on the exterior and pink (7.5YR 7/4) on the interior

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	White	<0.5mm	Sub-rounded	5%	Good	Quartz grains
2	Black	≤0.5mm	Sub-angular	5%	Fair	Black sandy grits

Coherence: Coherent group.

Fabric No: 42

Associated Class(es): TORP.3, TRC.2

Defining Characteristics: A similar sandy earthenware to Fabrics 40 and 41 except that it is a darker orange-buff with larger, more rounded and better sorted sandy inclusions. Sherds frequently have a thick bitumen coating on the interior and a light grey calcareous encrustation on the exterior.

Specifications: Average weight with a slightly porous, loose, granular structure, a gritty feel and a fine, irregular fracture.

Core: Light brown (7.5YR 6/4)

Margin: Same as core

Surface: Pink (7.5YR 7/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Translucent white	<0.5 - 1mm	Rounded	3 - 5%	V. good	Quartz grains
2	Black/grey	≤0.5mm	Sub-angular	5 - 7%	Good	Black sandy grits

Coherence: Coherent group.

Fabric No: 43

Associated Class(es): TORP.4

Defining Characteristics: A similar sandy earthenware to Fabric 42 except that the fabric is very fine and compact with few visible inclusions, a very low black/grey sandy grit component and more opaque-white, non-quartz inclusions.

Specifications: Average weight with a slightly porous, compact, granular structure, a gritty feel and a fine fracture.

Core: Light brown (7.5YR 6/4)

Margin: Same as core

Surface: Pink (7.5YR 7/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Opaque white	<0.5mm	Rounded	3%	V. good	Lime?
2	Translucent white	0.25mm	Well rounded	<3%	V. good	Quartz grains
3	Black/grey	≤0.25mm	Sub-rounded	<3%	Fair	Black/grey grits

Coherence: Coherent group.

Fabric No: 44

Associated Class(es): SLIP.B

Defining Characteristics: Fine, tight-grained, consistently-reduced, light-grey or light yellow-grey earthenware with very few visible inclusions and some small voids that can be seen under the hand lens.

Specifications: Average to dense in weight with a slightly porous but compact structure, a soapy feel and a fine irregular fracture.

Core: Light greenish grey (10 & 7/2) or pale yellow (2.5Y 7/3-4)

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Voids	<0.5 - 1mm	Rounded or elongated	c.1%	Fair	Air holes

Coherence: Coherent group.

Fabric No: 45

Associated Class(es): SLIP.TB

Defining Characteristics: Fairly tight, fully-oxidised, orange or orange-buff earthenware with a slightly rough appearance in the fracture. Under the hand lens varied inclusions and frequent voids are visible.

Specifications: Average weight with a compact structure, a rough, soapy feel and a fine, irregular fracture.

Core: Light brown (7.5YR 6/4) or reddish yellow (5YR 6/6)

Margin: Same as core

Surface: Reddish yellow (5YR 7/6)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Opaque white	<0.5 - 1mm	Sub-rounded	≤1%	Good	Lime?
2	Buff/orange	1 - 3mm	Sub-angular	<1%	Fair	Hard grit
3	Brick red	<0.5 - 1mm	Sub-angular	≤1%	Good	Stone or grog?
4	Voids	<0.5 - 1mm	Rounded or elongated	2 - 3%	Fair	Air holes

Coherence: Coherent fabric although the inclusions are rather varied.

Fabric No: 46

Associated Class(es): SLIP.PBR, SLIP.R

Defining Characteristics: Hard, fine-grained, fully-oxidised, orange earthenware with very few visible inclusions or with a fine, rather variable sand temper.

Specifications: Average weight with a compact structure, a smooth feel and a fine, clean or sub-conchoidal fracture.

Core: Reddish yellow (5YR 6/5) or light brown (7.5YR 6.5/4)

Margin: Same as core

Surface: Pink (7.5YR 7/4) or pink (7.5YR 7/3)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Black	≤0.5mm	Sub-angular	0 - 5%	Good	Black sandy grits

Coherence: If a larger assemblage were available it may be worth sub-dividing the non-gritted and the gritted fabrics as well as the fabric with different types of grit.

Fabric No: 47

Associated Class(es): ALK.1-3

Defining Characteristics: Fine-grained, gritty, slightly brittle, buff yellow or light orange earthenware. Under the hand lens numerous sandy inclusions dominated by quartz grains are visible, together with numerous small voids.

Specifications: Average to light in weight with a compact granular structure, a gritty feel and a fine irregular fracture.

Core: Pale yellow (5Y 8/3-4) or pale yellow (2.5Y 7/3)

Margin: Same as core

Surface: Pale yellow (2.5Y 8/4)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Semi-opaque white	≤0.5mm	Sub-angular	5 - 10%	V. good	Quartz grits
2	Grey or red	<0.5mm	Sub-angular	0 - 3%	V. good	Other sandy elements

Coherence: Some variation is discernable. The fabric could probably be sub-divided.

Fabric No: 48

Associated Class(es): ALK.RC

Defining Characteristics: Relatively coarse, red or grey fired earthenware with frequent large, usually angular, inclusions (up to 1mm but mostly <0.5mm).

Specifications: Dense and heavy with a compact, granular structure, a gritty feel and a fine, irregular fracture.

Coherence: The fabric displays considerable variation and clearly covers a number of different productions, though all have similar attributes.

Fabric No: 49

Associated Class(es): MEW.LG, MEW.MO

Defining Characteristics: Very fine, consistently reduced, light-grey earthenware with very few visible inclusions and a porous brittle structure.

Specifications: Light weight with a compact but porous structure, a smooth, gritty feel and a fine, irregular fracture.

Core: Light olive grey (5Y 6/2) or light grey (5Y 6.5/1)

Margin: Same as core

Surface: Same as core

Coherence: Coherent group.

Fabric No: 50

Associated Class(es): MEW.DG

Defining Characteristics: Light, brittle earthenware, similar to Fabric 49 except that the colour is dark grey.

Specifications: Light weight with a compact but porous structure, a smooth, gritty feel and a fine, irregular fracture.

Core: Grey (2.5Y 5.5/1)

Margin: Same as core

Surface: Grey (2.5Y 6/1)

Coherence: Coherent group.

Fabric No: 51

Associated Class(es): MEW.O, MEW.MO

Defining Characteristics: Light brittle earthenware, similar to Fabric 49 except that it is fully oxidised to a light orange.

Specifications: Light weight with a compact but porous structure, a smooth, gritty feel and a fine, irregular fracture.

Core: Red (2.5YR 5.5/6)

Margin: Same as core

Surface: Lighter red (not in Munsell)

Coherence: Coherent group.

Fabric No: 52

Associated Class(es): MEW.BR, MEW.MO

Defining Characteristics: Light brittle earthenware, similar to Fabric 49 except that it is oxidised to a light, yellowish-brown. The fabric is also slightly more heavily sintered with some varied coarse inclusions (<1%).

Specifications: Average weight with a compact structure, a gritty feel and a fine, irregular fracture.

Core: Light brown (7.5YR 6/4)

Margin: Same as core

Surface: Pink (7.5YR 7/3)

Coherence: Coherent fabric though there is some colour variation.

Fabric No: 53

Associated Class(es): MEW.C, MEW.MO

Defining Characteristics: Light brittle earthenware, similar to Fabric 49 except that fabric is fully-oxidised and fired to a light, creamy-yellow.
Specifications: Light weight with a compact but porous structure, a smooth, gritty feel and a fine, irregular fracture.

Core: Pale yellow (2.5Y 7/3) or pink (7.5YR 7/4)

Margin: Same as core

Surface: Pale yellow (2.5Y 7/3) or very pale brown (10YR 7/3.5)

Coherence: Coherent fabric although there is more colour variation than found in the other Moulded Ewer fabrics (Fabric 49-52, 54).

Fabric No: 54

Associated Class(es): MEW.CC, MEW.MO

Defining Characteristics: Light, fully oxidised creamy-yellow earthenware, similar to Fabric 53 but with a softer feel and many more coarse inclusions. The fabric can be either fairly soft or harder with heavier sintering and is the coarsest of the Moulded Ewer fabrics (Fabrics 49-53), containing a number of sub-rounded inclusions and some organic elements.

Specifications: Light weight with a loose or compact granular structure, a soft, gritty feel and a fine, irregular fracture.

Core: Vary pale brown (10YR 7/3) or reddish yellow (5YR 6/6)

Margin: Same as core

Surface: Pale yellow (2.5Y 8/2)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Reddish black	<0.5 - 1mm	Sub-rounded or angular	≤3%	Fair	Hard grit
2	Translucent white	≤0.5mm	Rounded	0 - <3%	Good	Quartz grains
3	Opaque white	<0.5 - 2mm	Sub-rounded	0 - 5%	Poor	Lime flecks
4	Voids	0.5 - 5mm	Elongated	0 - 15%	Poor	Organic inclusions

Coherence: Reasonably consistent fabric, though the size, frequency, sorting and nature of the coarse inclusions varies.

Fabric No: 55

Associated Class(es): TIN.B, TIN.CT, TIN.ML, TIN.N-ID, TIN.PL, TIN.T, TIN.TBS, TIN.W1

Defining Characteristics: Finely-levigated, hard, creamy-yellow earthenware with a fine irregular fracture. The fabric can be untempered, but more often it has some poorly-sorted, rounded quartz inclusions.

Specifications: Light weight with a compact structure, a rough feel and a fine irregular fracture.

Core: Pale yellow (2.5Y 8/3)

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Translucent white	<0.5 - 1mm	Rounded	0 - 5%	Poor	Quartz grains

Coherence: Consistent fabric but the frequency of the coarse inclusions varies.

Fabric No: 56

Associated Class(es): TIN.W2

Defining Characteristics: Fine, compact earthenware, similar to Fabric 55 but more heavily sintered and fired to an orange or pinkish orange. The fabric also has various, fine, sandy grits, the most abundant of which are small, sub-rounded, fairly well-sorted, dark-red elements; possibly grog.

Specifications: Average weight with a compact brittle structure, a gritty feel and a fine irregular fracture.

Core: Pink (7.5YR 7/4) or red (2.5YR 6/6)

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Red, brown or white	≤0.5mm	Sub-angular or sub-rounded	≤3%	Fair	Sandy grits and grog?

Coherence: Coherent group.

Fabric No: 57

Associated Class(es): SPW.BG, SPW.BW, SPW.N-ID, SPW.YB

Defining Characteristics: Finely-levigated, hard, orange earthenware with a brittle, slightly powdery fracture and a smooth feel. The fabric has occasional small and varied inclusions, mostly opaque-white flecks and some micaceous elements, but these are both rare and rather insignificant.

Specifications: Average weight with a compact and slightly porous structure, a soft, gritty feel and a fine fracture.

Core: Reddish yellow (7.5YR 6/6) or red (2.5YR 6/6)

Margin: Same as core

Surface: Light brown (7.5YR 6/4) or red (2.5YR 6/6.5)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Opaque white	<0.5mm	Sub-angular	≤2%	Fair	Lime flecks

Coherence: Coherent fabric which appears to be represented across all of the different stylistic groups of SPW. The fabric is also similar to Fabric 85 but slightly less compact.

Fabric No: 58

Associated Class(es): FRIT.B, FRIT.BL, FRIT.BW, FRIT.DEG, FRIT.EI, FRIT.G, FRIT.GW, FRIT.IT, FRIT.IW, FRIT.L, FRIT.MT, FRIT.MW, FRIT.P, FRIT.T, FRIT.TB, FRIT.TBU, FRIT.W

Defining Characteristics: Stonepaste or frit body made from crushed quartz combined with small parts of china clay and crushed glass fired at low temperature. The paste feels light, soft and brittle and is usually pure white, though some less pure mixes occur which can appear red,

buff or grey. Under the hand lens the body appears glassy and grainy. Some of the more impure frits can be difficult to distinguish from an earthenware body.

Specifications: Light weight with a soft, porous structure, a soft, powdery feel and fine, irregular fracture.

Core: White (5Y 8/1)

Margin: Same as core

Surface: Same as core

Coherence: Coherent fabric type, although within the frits it would be possible to make further sub-divisions based on the level of impurity.

Fabric No: 59

Associated Class(es): FRIT.TB

Defining Characteristics: Coarse frit body, similar to Fabric 58 but with a soft friable texture, a strong yellowish colour and numerous large, fairly well-sorted quartz grains and occasional black elements.

Specifications: Light weight with a soft, loose, granular structure, a rough feel and an irregular fracture.

Core: Pale yellow (2.5Y 8/2.5)

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Translucent white	≤1mm	Sub-angular or rounded	3 - 10%	Fair	Quartz grains

Coherence: The distinction between this and Fabric 58 is based on the relative proportion of coarse inclusions. Within this fabric, the frequency of coarse inclusions varies.

Fabric No: 60

Associated Class(es): FOPW.1, FOPW.4

Defining Characteristics: Finely levigated, hard, compact earthenware with a clean, sub-conchoidal fracture and some very small, occasional sandy inclusions. The fabric is predominantly oxidised to orange, though sometimes a portion or the whole of the core is reduced to light grey.

Specifications: Average weight with a compact structure, a smooth feel and a clean or sub-conchoidal fracture.

Core: Reddish yellow (7.5YR 6/6) or grey (5Y 6/1)

Margin: Same as core

Surface: Reddish yellow (7.5YR 6/6)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Various	≤0.1mm	Sub-angular	<1 - 2%	Good	Sandy elements

Coherence: Coherent group.

Fabric No: 61

Associated Class(es): FOPW.2, FOPW.4

Defining Characteristics: Finely-levigated, hard, compact earthenware with a clean or semi-conchoidal fracture and small, occasional sandy grits and small fairly regular voids. The fabric is fully-oxidised to a strong yellow-orange, though the cores are often reduced to grey. In general similar to Fabric 60 but with a pitted appearance and slightly more advanced sintering.

Specifications: Average weight with a compact structure, a soft feel and a clean or sub-conchoidal fracture.

Core: Reddish yellow (5YR 5.5/6) or grey (10YR 5/1)

Margin: Reddish yellow (5YR 5.5/6) or brown (7.5YR 5/2)

Surface: Reddish yellow (5YR 5-5.5/6)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Various	≤0.3mm	Sub-angular	1 - 2%	Fair	Sandy elements
2	Voids	<0.1 - 2mm	Rounded or elongated	2 - 5%	Poor	Air holes

Coherence: Coherent group.

Fabric No: 62

Associated Class(es): FOPW.3

Defining Characteristics: Finely-levigated, hard, compact earthenware consistently oxidised through the core. Similar to Fabrics 60 and 61 but seems to have higher levels of fine opaque white elements and less sandy inclusions and voids.

Specifications: Average weight with a compact structure, a soft gritty feel and clean or sub-conchoidal fracture.

Core: Reddish yellow (5YR 6-5/6 or 7.5YR 6/6)

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Opaque white	<0.1 - 0.4mm	Sub-angular	3 - 7%	Fair	White calcareous flecks
2	Dark brown	0.1 - 0.4mm	Sub-angular	1 - 3%	Good	Sandy grits

Coherence: Coherent group.

Fabric No: 63

Associated Class(es): IRPW

Defining Characteristics: Very hard, finely-levigated earthenware with no visible inclusions and a clean or semi-conchoidal fracture. The majority of pieces are thoroughly oxidised to a strong orange though a few pieces are misfired with a grey core.

Specifications: Average to dense in weight with a compact structure, a soft feel and a clean or semi-conchoidal fracture.

Core: Red (2.5YR 5.5/8)

Margin: Same as core

Surface: Red (2.5YR 6/8)

Coherence: Coherent group.

Fabric No: 64

Associated Class(es): IRAB

Defining Characteristics: Soft, brittle earthenware with a fine, abrasive, sandy texture, fired to a reddish-brown with patchy areas of black fire clouding. The cores are either consistently oxidised or slightly reduced to grey. The fabric contains abundant, poorly-sorted, sub-angular quartz grains in addition to smaller, mixed, sandy elements and high levels of mica.

Specifications: Average weight with a soft porous granular structure, a gritty feel and a fine irregular laminar fracture.

Core: Red (10R 5/8) or brown (10YR 5/3)

Margin: Red (10R 5/8) or dark red (2.5YR 4/6)

Surface: Yellowish red (5YR 5/6)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Translucent white/pink	0.1 - 1mm	Angular or sub-rounded	5 - 10%	Fair	Quartz grains
2	Silver	<0.5mm	Flakes	1 - 2 %	Good	Mica

Coherence: Coherent fabric group.

Fabric No: 65

Associated Class(es): SBBW

Defining Characteristics: Very soft and brittle heavily, reduced earthenware with a consistent grey surface and darker black cores. In section the core appears laminated and is filled with angular sub-spherical inclusions that have turned dark like the rest of the fabric matrix, making them difficult to identify, although they are probably quartz. The fabric also has high levels of mica that are visible on the surface.

Specifications: Light weight with a soft porous structure, a rough feel and an irregular, laminar fracture.

Core: Black (N 2.5/1)

Margin: Same as core

Surface: Dark grey (N 4/1)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Grey	<0.5 - 1mm	Angular	5%	Poor	Quartz?
2	Silver	<0.5mm	Flakes	1 - 2 %	Good	Mica

Coherence: Seems to range from a softer darker form to a harder lighter grey condition where the inclusions become more readily recognisable.

Fabric No: 66

Associated Class(es): SPL.L

Defining Characteristics: Very fine, compact, evenly oxidised orange earthenware with a hard, slightly brittle, uneven fracture and an extremely fine, grainy composition with occasional, angular, sandy grits and a number of small, mostly elongated voids.

Specifications: Average weight with a compact structure, a gritty feel and a fine irregular fracture.

Core: Reddish yellow (5YR 7-6/6) or light brown (7.5YR 6/3)

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Mixed or opaque white	<0.5mm	Angular	≤1%	Fair	Sandy grains, mostly quartz

Coherence: The fabric is not particularly coherent but it is probably too fine-grained to sub-divide.

Fabric No: 67

Associated Class(es): MTB.1

Defining Characteristics: Fully-vitrified, light-grey stoneware with high levels of coarse inclusions including poorly-sorted, sub-rounded, black elements and occasional large rounded translucent grains.

Specifications: Dense and vitrified with a rough feel and a clean, sub-conchoidal fracture.

Core: Light bluish grey (5PB 7/1)

Margin: Same as core

Surface: Light greenish grey (10Y 7/1) or light grey (5Y 7/1)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Black	<0.5 - 4mm	Sub-rounded	7 - 10%	Poor	Hard black grit
2	Translucent white	1 - 4mm	Rounded	<1%	Fair	Translucent grit

Coherence: Very coherent.

Fabric No: 68

Associated Class(es): MTB.2

Defining Characteristics: Fully-vitrified, fine, grey stoneware, similar to Fabric 67 but with only very occasional coarse inclusions.

Specifications: Dense and vitrified with a smooth feel and a clean, sub-conchoidal fracture.

Core: Grey (N 4-5/1), light olive grey (5Y 6/2) or light grey (5Y 7/1)

Margin: Same as core

Surface: Light grey (5Y 7/2)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Black	≤0.5mm	Rounded	<1%	Good	Black grit
2	Translucent or opaque white	0.5 - 1.5mm	Sub-rounded	<1%	Good	White grit

Coherence: The colour and the presence/absence of the occasional inclusions appear to vary somewhat, suggesting that the fabric could be further sub-divided.

Fabric No: 69

Associated Class(es): DAB

Defining Characteristics: Dark reddish-brown, fine-grained stoneware with some coarse inclusions. The coarse inclusions are large, rounded and the same colour as the matrix. The inclusions have often contracted more than the body leaving them loose in their own voids.

Specifications: Dense and vitrified with a rough, soapy feel and a clean, semi-conchoidal fracture.

Core: Dark reddish grey (10R 4/1)

Margin: Same as core

Surface: Week red (10R 5/2)

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Reddish-brown	<0.5 - 2mm	Rounded	≤2%	Fair	Hard grit

Coherence: Smaller vessels tend to display a more refined version of the fabric.

Fabric No: 70

Associated Class(es): LIB

Defining Characteristics: Very fine-grained, light creamy-yellow stoneware with only very occasional, rather varied inclusions.

Specifications: Dense and vitrified with a soft, soapy feel and a clean, sub-conchoidal fracture.

Core: Very pale brown (10YR 7/4)

Margin: Same as core

Surface: Very pale brown (10YR 8/3)

Coherence: Different forms of the fine inclusions suggest that a number of fabrics are included here, however a large sample is needed in order to distinguish reliably between the different groups.

Fabric No: 71

Associated Class(es): WINC

Defining Characteristics: Typically a very fine-grained, soft-textured, slightly porous, light-white earthenware, although there are a range of harder orange and lightly reduced grey bodies included within this generic fabric category.

Specifications: Light weight with a compact porous structure, a smooth feel and a fine irregular fracture.

Core: Pale yellow (5Y 8/2) or pink (7.5YR 7/4)

Margin: Same as core

Surface: Pale yellow (5Y 8/2)

Coherence: Generic fabric category.

Fabric No: 72

Associated Class(es): INCIMP

Defining Characteristics: Fine-grained, dense, compact, light-cream to orange earthenware with no visible inclusions.

Specifications: Dense in weight with a compact structure, a rough feel and a fine, irregular fracture.

Core: Pale yellow (2.5Y 8/3) or light brown (7.5YR 6/4)

Margin: Same as core

Surface: Pale yellow (2.5Y 8/3) or very pale brown (10YR 7/4)

Coherence: Coherent group.

Fabric No: 73

Associated Class(es): REDYEL

Defining Characteristics: Finely-levigated, soft, slightly porous, light-yellow earthenware with no visible inclusions and a chalky texture.

Specifications: Light weight with a compact but porous structure, a smooth feel and fine fracture.

Core: Light yellow

Margin: Same as core

Surface: Same as core

Coherence: Similar to the very fine, light fabric found on some of the UGP class, but this fabric appears to be slightly softer and paler.

Fabric No: 74

Associated Class(es): CREAM

Defining Characteristics: Very hard and dense, brick-red earthenware with an even, compact structure and some very fine, well-sorted grits and grog.

Specifications: Dense and heavy with a compact structure, a rough feel and a fine, irregular fracture.

Core: Red (2.5YR 6-7/6)

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Red or black	≤0.5mm	Sub-rounded	1 - 2%	Good	Grog or grit

Coherence: Coherent fabric group, although the inclusions vary slightly.

Fabric No: 75

Associated Class(es): CBW.1-45, VBW.1-2, ENAM, QING.1-2, WW.0-5, WWG.1-2, WWJ.1-4, WWS.1-10

Defining Characteristics: Very fine, fully vitrified, glassy white porcelain.

Specifications: Dense and vitrified with a smooth feel and a sub-conchoidal fracture.

Core: White

Margin: Same as core

Surface: Same as core

Coherence: Generic group.

Fabric No: 76

Associated Class(es): LQC.1-4, JDC, GDC.4

Defining Characteristics: Very fine, fully-vitrified, porcelainous-stoneware with almost no visible inclusions, but some small voids and occasional small impurities (<0.5mm). The fabric is fired to a pure-white or more often a reduced light or dark grey. Where the body is exposed on the vessel surface it appears bright red.

Specifications: Dense and heavy, fully-vitrified with a smooth feel and a sub-chonchoidal fracture.

Core: Light grey, white or dark grey.

Margin: Same as core

Surface: Same as core or bright red

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Voids	<0.5mm	Rounded	≤3%	Good	Bubbles or burned out material, iron?

Coherence: Some variation, although the visible differences are mostly caused by firing atmosphere.

Fabric No: 77

Associated Class(es): GDC.1-3, WWG.3

Defining Characteristics: Similar to Fabric 76. Fully vitrified, refined, porcelainous-stoneware with almost no visible impurities. The main difference is that it is fired to a light yellowish-grey and contains more small voids.

Specifications: Dense and heavy, fully-vitrified with smooth or sub-conchoidal fracture.

Core: Light yellowish grey

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Voids	≤0.5mm	Rounded	5%	Fair	Air pockets

Coherence: Coherent group.

Fabric No: 78

Associated Class(es): CHANG

Defining Characteristics: Sandy textured, buff-yellow stoneware with occasional, very fine black grits and some voids. The fabric is hard-fired but not always fully vitrified, it could therefore be classified either as a high-fired earthenware or a low-fired stoneware.

Specifications: Dense and heavy, compact and mostly vitrified with a rough feel and a sub-conchoidal fracture.

Core: Yellow-grey

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Black	<0.5mm	Sub-angular	<3%	Fair	Black grit
2	Voids	<0.5 - 1mm	Various	≤3%	Poor	Air pockets

Coherence: Generally coherent.

Fabric No: 79

Associated Class(es): DEH.1-2, WWF

Defining Characteristics: Dense, fine-grained white porcelain with no visible inclusions but sometimes containing numerous voids. The fabric is fully vitrified with a distinctive sugary texture and a sub-conchoidal, but non-glassy fracture.

Specifications: Dense and vitrified with a smooth, sub-conchoidal fracture.

Core: White

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Voids	<0.5mm	Rounded	0 - 10%	Good	Air pockets

Coherence: Coherent, reasonably distinctive fabric.

Fabric No: 80

Associated Class(es): WWSL

Defining Characteristics: Non-glassy, fully-vitrified, white porcelain with a dense, grainy structure and numerous coarse inclusions.

Specifications: Dense and heavy, compact and vitrified with a rough feel and a sub-conchoidal fracture.

Core: White

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	White or grey	0.5 - 1.5mm	Angular	<3%	Fair	Feldspar?
2	Black	<0.5mm	Rounded	0 - 3%	V. good	Black specks

Coherence: Coherent and very distinctive fabric.

Fabric No: 81

Associated Class(es): STO.GRY

Defining Characteristics: Fine, very hard stoneware with occasional small black flecks, which appear infrequently in the broken section but are more numerous under the glaze. The fabric is generally fired to a reduced grey but is sometimes re-oxidised on exposed surfaces such as the foot-ring or the interior unglazed stacking ring. Some pieces are lighter coloured through the core and appear closer to a porcelainous-stoneware.

Specifications: Dense and heavy, compact and vitrified with a rough feel and a sub-conchoidal fracture.

Core: Grey

Margin: Same as core

Surface: Grey or orange

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Black	<0.5 - 1mm	Rounded	<3%	Good	Black grit

Coherence: Some subtle variation but generally coherent.

Fabric No: 82

Associated Class(es): STO.BUR

Defining Characteristics: Coarse, gritty but densely-fired stoneware containing frequent small white grits and infrequent black grits as well as small and large voids. The fabric is fired to a dark red, reddish-grey or lighter yellow-grey. Although the fabric is fully-vitrified the matrix does not appear fully fused.

Specifications: Dense and heavy, fully-vitrified with a harsh feel and a hackly fracture.

Core: Dark red, reddish-grey or yellow-grey

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	White/grey	≤0.5mm	Angular	3%	Fair	Feldspar?
2	Black	≤0.5mm	Angular	<3%	Fair	Black flecks
3	Voids	<0.5 - 5mm	Various	2 - 20%	V. poor	Air pockets

Coherence: The composition of the fabric appears to be consistent although the firing colour and the degree of vitrification varies.

Fabric No: 83

Associated Class(es): STO.THAI

Defining Characteristics: Hard, grainy, creamy-yellow-buff or grey stoneware containing occasional fine black grits and frequent very small voids. The fabric has a fine compact structure although the matrix does not appear to be fully fused.

Specifications: Dense and heavy, fully vitrified with a gritty feel and a sub-conchoidal fracture.

Core: Buff or grey

Margin: Same as core

Surface: Same as core

Inclusions:

	Colour	Size	Shape	Frequency	Sorting	ID
1	Black	≤0.5mm	Sub-rounded	≤3%	Fair	Black grits
2	Voids	<0.5 - 1mm	Sub-rounded	<3 - 5%	Good or poor	Air pockets

Coherence: Generally coherent although the degree of vitrification varies.

Fabric No: 84

Associated Class(es): SPL.GW, SPL.P, GRAF.TL, GRAF.B, GRAF.G, GRAF.Y, GRAF.M, GRAF.D, MONO.Y

Defining Characteristics: Finely-levigated, dense, creamy-yellow earthenware with a smooth texture and only a few visible inclusions.

Specifications: Average weight with a compact structure, a smooth feel and a clean fracture.

Core: Yellow (10YR 8/4)

Margin: Same as core

Surface: Same as core

Coherence: Some variation in the hardness but generally coherent.

Fabric No: 85

Associated Class(es): SPL.GW, SPL.P, GRAF.EP, GRAF.H, CHAMP, GRAF.LP, GRAF.DI, GRAF.S, GRAF.B, GRAF.G, GRAF.Y, GRAF.M, GRAF.D, GRAF.N-ID, MONO.G, MONO.Y

Defining Characteristics: Finely-levigated, dense orange earthenware similar to Fabric 84 but with a slightly coarser.

Specifications: Average weight with a compact structure, a smooth feel and an irregular fracture.

Core: Light reddish brown (5YR 6/4-6)

Margin: Same as core

Surface: Same as core

Coherence: The fabric does contain some very small inclusions that vary somewhat, indicating that more than one production is represented. The fabric is too refined to differentiate sub-groups by eye or with a hand lens.

Fabric No: 86

Associated Class(es): GWSG

Defining Characteristics: Finely-levigated, very hard, creamy-yellow, high-fired earthenware with a clean sub-conchoidal fracture.

Specifications: Dense and compact with a hard, smooth feel and a sub-conchoidal fracture.

Core: Yellow (10YR 8-7/4)

Margin: Same as core

Surface: Same as core

Coherence: Coherent group.

APPENDIX III - SITE CATALOGUE

Explanation

The information on the sites that Williamson surveyed and recorded is derived primarily from the Site Cards in the Collection Archive, as well as from the sherds themselves. Each of the sites that Williamson visited was assigned a Site Code composed of a prefix letter representing a particular survey Region, followed by a number representing the site (for Region locations see Fig. 3, for a key to the Region prefix letters used in the site catalogue see Table 15 for individual Site Code locations see Table 16). The Site Codes were marked onto the sherds or in some cases bags. For the majority of sites, a Site Card was also filled out headed by the Site Code, a toponym - where one was available - and other types of information including either a description of the site location, or a list enumerating the finds recovered from a site. A list of all of the Site Codes used by Williamson has been prepared from a combination of the Site Codes marked on the sherds and the cards (Table 16). For an explanation of the headings used in Table 16 see the summary before the site catalogue below.

In order to relocate the sites various sources have been employed. In a few cases, independent information has been available (P. Morgan, 1991; Rougeulle, 1991a, 1991b, 1994; Whitcomb, 1979; Williamson, 1969). For the majority of sites though, only those linked to a toponym on the site cards have been located. In those cases, the toponyms have been located using map sheets and gazetteers. Paul Luft provided invaluable assistance with the use of Persian sources and the interpretation of Williamson's transliteration of place names. Each of the site descriptions below indicates how the toponym has been located, and from what source the location has been taken. A list of source abbreviations is included before the site catalogue below.

It should be noted within the site catalogue that all of the known sites, whether finds are represented in the Collection or not, have been listed, apart from for the Marv-Dasht Survey, where only sites with finds represented in the Collection have been included. Attention is drawn to the fact that there may be some confusion in the list of sites from Region D, as the same letter prefix was used in the Sirjan Survey and as a result, the two sets of sites are indistinguishable, apart from where they have been assigned a toponym on the Site Cards.

The following headings have been used in the site catalogue:

Site	Site Code assigned by Williamson and marked on the site cards of the sherds.
Toponym	Place name associated with the site code on the Site Cards.
Other Variants	Toponyms identified in maps and gazetteers that are thought to be the same as Williamson's toponym.
Details	Information on how the site has been located and from what source.
Lat	Latitude in minutes and seconds.
Long	Longitude in minutes and seconds
No. of Sherds	Number of sherds in the Williamson Collection recorded for the site.

ABREVIATIONS

C & S	Constable, C.G. & Stiffe, A.W. 1989: *The Persian Gulf Pilot 1870 - 1932.* Admiralty Hydrographic Office: London.
FJI	Farhang-e Joghrafiya'i Iran, 1951: Vol. VII. Tehran.
	Farhang-e Joghrafiya'i Iran, 1953: Vol. VIII. Tehran.
TPC	*Tactical Pilotage Charts*, Map Sheets H-6B (1998), H-6C (1998), H-7A (1994), H-7D (1998).
USBGN	*U.S. Board on Geographic Place Names, Gazetteer Iran*, 1956: The Department of the Interior: Washington D.C.
ASIS	Williamson, c.1972: *Archaeological Survey of Islamic Sites in Southern Iran 1969-1972.* Unpublished Report: Ashmolean Archive[33].

[33] The source was used by P. Morgan to locate a number of sites in the Minab region including K103 (Old Hormuz). Some of these identifications contradict the information derived from the Site Cards. Unfortunately the report has not been seen by the present author and therefore it has not been possible to check the reason for this discrepancy. As a result, only the identifications that do not contradict the Site Card evidence have been included.

REGION PREFIXES

Region	Location
A	Rud-i-Shur to Bandar-i-Lengeh
AA	Hormuz Island
AE	Kish Island
B	Lengeh to Qalat-i-Abdl Rahman
D	Neran to Naband
F	Tahiri to Rud-i-Mond
H	Bushehr Peninsula
J	Rud-i-Shur to Minab
K	Minab delta
L	Minab to Jask
P	Halil-Rud valley
Q	Rudan and Bulak, (between the Minab and the Halil Rud)
R	Southern Kerman (between Jiruft and Fars)
S	Sirjan Survey
V	Shiraz area down towards Region B
Z	Bam/Rayen

Table 15 *Region prefixes used in the Site Codes listed in the site index below, Table 16.*

Site	Toponym	Other variants	Details	Lat	Long	No. of sherds
A1	Kunar Lamzam	Kunardon	Kenar-e means 'next to something', this should therefore be 'the place next to Lemazan', where there is indeed a cluster of ruins marked (TPC Sheet H-7D).	5453	2704	7
A2	T. Podal-Lamzam	Podol-Lemazan, Podal	The town of Podol lies within the Lemazan district, which explains the construction used by Williamson. The position of Podal is marked (TPC Sheet H-7D).	5458	2700	5
A3	Pol Angur	Pul-Anguran, Pul	The site is difficult to locate. The best guess is that it is a bridge at Anguran although it could also be the peninsula at Pul, which has been noted as a site with ruined water tanks at E5545/N2659 (C & S: 159).	5552	2714	1
A4	Pol Angur	See A3	See A3.	5552	2714	4
A5	Pol Angur	See A3	See A3.	5552	2714	9
A6			Not located.			0
A7			Not located.			0
A8	Mehtabi	Bandar-e Mahtabi	More than one location is listed for an equivalent version of the place name, Bandar-e Mahtabi, but only one of these falls within the relevant region. The location of this is given (USBGN: 59).	5520	2647	4
A9	Mehtabi	See A8	See A8.	5520	2647	0
A10	Mehtabi	See A8	See A8.	5520	2647	0
A11	Bandar Soflan	Bandar Suflin, Berkeh-ye Soflin, Berkeh Sofleyn	Equivalent versions of the place name, Bandar Suflin and Berkeh-ye Soflin, are listed in more than one location, but only one of the locations falls within the relevant region (USBGN: 59). A further variant of the same name, Berkeh Sofleyn, is marked (TPC Sheet H-7D) and the location of this is given.	5514	2645	45
A12	Moalem	Mu'allim	An equivalent version of the place name, Mu'allim, is listed and the location of this is given (Adamec, 1989: 551). The Site Card for A12 also contains the sub-heading Pol Angur 3, but the reason for the second toponym is not clear.	5530	2639	2
A13	Moalem	Mu'allim	An equivalent version of the place name, Mu'allim, is listed and the location of this is given (Adamec, 1989: 551). The Site Card for A13 also contains the sub-heading Mehtabi 2, but the reason for the second toponym is not clear.	5530	2639	1
A14	Moalem	Mu'allim	An equivalent version of the place	5530	2639	11

			name, Mu'allim, is listed and the location of this is given (Adamec, 1989: 551).			
A15	Khamir		The location of Khamir is given (USBGN: 280). A large fort and high tower are said to occupy the centre of the town (C & S: 159).	5536	2657	7
A17	Kung	Bandar-e Kong	An equivalent version of the place name, Bandar-e Kong, is listed and the location of this is given (USBGN: 59).	5456	2635	66
A18	Kung	See A17	See A17. The Site Card for A18 also contains the sub-heading 'Kung kiln'.	5456	2635	227
A19	Kung	See A17	See A17.	5456	2635	1
A20	Kung	See A17	See A17.	5456	2635	4
A21	Qaleh Leshtan	Qal'at Leshtan	The location on an equivalent version of the place name, Qal'at Leshtan, is marked (Rougeulle, 1996: 169). The place is described as being situated on a precipitous hill with ruined fortifications and water tanks and was apparently visited in 1694 by Gemelli Carreri (C & S: 172-73).	5450	2634	127
AA1	Hormuz		The location of Hormuz is marked (TPC Sheet H-7D).	5628	2704	594
AA2	Hormuz		See AA1.	5628	2704	24
AA3	Hormuz		See AA1.	5628	2704	41
AAC	Hormuz		See AA1.	5628	2704	3
AAP	Hormuz		See AA1.	5628	2704	4
AE1	Kish	Qais	The location on an equivalent version of the place name, Qais, is marked (TPC Sheet H-7D).	5359	2632	136
AE2	Kish	See AE1	See AE1.	5359	2632	115
AE3	Kish	See AE1	See AE1.	5359	2632	79
AE4	Kish	See AE1	See AE1.	5359	2632	54
AE5	Kish	See AE1	See AE1.	5359	2632	17
AE6	Kish	See AE1	See AE1.	5359	2632	1
AE10	Kish	See AE1	See AE1.	5359	2632	10
AE20	Kish	See AE1	See AE1.	5359	2632	1
B1	Lengeh	Bandar-e Lengeh	An equivalent version of the place name, Bandar-e Lengeh, is listed and the location of this is given (USBGN: 323).	5453	2633	0
B2	Jisheh	Yisheh, Gasheh, Ras Khargu	Yisheh, Gasheh or Ras Khargu are listed as equivalent versions of the same place name and their location is given (Adamec, 1989: 353). The Site Card for B2 also contains the sub-heading Shiu 1, but the reason for the second toponym is not clear.	5452	2632	8
B3	Jisheh	Yisheh, Gasheh, Ras Khargu	Yisheh, Gasheh or Ras Khargu are listed as equivalent versions of the same place name and their location is given (Adamec, 1989: 353).	5452	2632	1
B4	Shenas	Shias	An equivalent version of the place name, Shias, is listed and the location	5448	2631	69

			of this is given (Adamec iii.1989: 672).			
B5	Shenas	See B5	See B5.	5448	2631	12
B6	Shenas	See B5	See B5.	5448	2631	0
B7	Millu	Milu, Molu	Two equivalent versions of the place name, Milu and Molu, are listed and their location is given (USBGN: 354).	5444	2631	0
B8	Bostaneh		The location of Bostaneh is marked (TPC Sheet H-7D).	5439	2631	30
B9	Bostaneh		See B9.	5439	2631	46
B11	Moghu		The location of Moghu is given by Adamec (1989: 553).	5431	2636	16
B12	Bandar Hosseineh	Bandar-e Hasineh	More than one location is listed for an equivalent version of the place name, Bandar-e Hasineh, but only one of these falls within the relevant region. The location of this is given (USBGN: 59).	5422	2639	46
B13	Charek		The location of Charek is given by Adamec (1989: 165).	5416	2643	1
B14	Charek		See B14.	5416	2643	1
B15	Tavuneh	Tahuneh	An equivalent version of the place name, Tahuneh, is listed and the location of this is given (Adamec, 1989: 752). The location also corresponds with the position of the site, which is marked on an annotated map in the Collection Archive marked 'Type 2 Londo Ware'.	5400	2646	23
B16	Tavuneh	See B15	See B15.	5412	2643	24
B17	T. Muveh		The toponym could not be identified, however the site location is given by Rougeulle (1991b: fig. 1). What source she based her identification on is not clear. The precise position of the site has been given where a group of ruins are marked (TPC Sheet H-7D).	5358	2646	45
B18	Gurzeh	Bandar-e Korzeh	Equivalent versions of the place name, including Gurzeh and Bandar-e Korzeh, are listed and their location is given (USBGN: 59).	5358	2644	3
B19	Gurzeh	See B18	See B18.	5358	2644	26
B20	Kal'at 'Abd al-Rahman		The toponym could not be identified, however the site location is given by Rougeulle (1991b: fig. 1). What source she based her identification on is not clear. The precise position of the site has been given where a ruined fort is marked (TPC Sheet H-7D).	5337	2646	124
B21	Kal'at 'Abd al-Rahman		See B20.	5337	2646	24
B22	Kal'at 'Abd al-Rahman		See B20.	5337	2646	0
B23	Tavuneh	Tahuneh	An equivalent version of the place name, Tahuneh, is listed and the location of this is given (Adamec,	5412	2643	6

			1989: 752).			
B24	Ruvan	Ruvvan, Bandar-e Divan	Equivalent versions of the place name, including Ruvvan and Bandar-e Divan are listed and their location is given (USBGN: 59).	5435	2635	7
B25	Tavuneh	See B23	See B23.	5412	2643	4
B29	Kal'at 'Abd al-Rahman		See B20.	5337	2646	1
C2			Not located.			0
C3			Not located.			0
C4			Not located.			0
C5			Not located.			0
C6			Not located.			0
C7			Not located.			0
C8			Not located.			0
D1			The precise location of D1 is marked on an annotated map from the Collection Archive marked 'Type 2 Londo'.	5309	2711	50
D2			Not located.			2
D3			Not located.			14
D4			Not located.			1
D5			Not located.			1
D6			Not located.			2
D7			Not located.			0
D8			Not located.			2
D9			Not located.			0
D12	Neran		The location of Neran is listed in USBGN (383). The Site Card also contains the caption 'no pottery'.	5316	2702	0
D13	Neran		The location of Neran is listed in USBGN (383).	5316	2702	0
D14	Moghun	Mogun, Moghdan	A possible equivalent version of the place name, Moghdan, is marked but not listed (Adamec, 1989: Map Sheet 52-C), however the 'd' in Moghdan is not readily expendable, which raises some doubt over the identification.	5310	2704	71
D15	Shiwu	Sheyu, Shiyu Shivuh Shiu	Equivalent versions of the same place name, including Sheyu and Shiyu (Adamec, 1989), Shiu (USBGN: 59) and Shivnh (Lorimer, 1908: 1812), are listed and their location is given. The town, which has a fort and a tower, is described as a port for goods traded widely through the Persian Gulf and over to Oman as well as to a route leading inland up Gabandi valley (Lorimer, 1908: 1812).	5308	2704	2
D16	Shiwu	See D15	See D15.	5308	2704	23
D17	Qalatu	Kalatu	An equivalent version of the place name, Kalatu, is identified as an uninhabited harbour with a few boats immediately adjacent to Ziyerat	5305	2705	48

			(Lorimer, 1908: 1796). The precise position of the site has been given where a small settlement is marked in a bay next to Ziarat (TPC Sheet H-7D).			
D18	Ziarat		The location of Ziarat is given by USBGN (575).	5305	2705	115
D19	Borogla	Buraghleh	The location of an equivalent version of the place name, Buraghleh, is given within the description of the Ziarat, which is "2 miles South East of Buraghleh" (Lorimer, 1908: 1796).	5304	2707	5
D20	Bostanu		The location of a small village with a round tower and a covered water tank and the place name Bostanu is given (C & S: 174). There is also another village closer to the main site cluster in Region D with the toponym Bostaneh, located at E5303/N2706, but this option has been disregarded, as the first toponym corresponds precisely.	5246	2723	3
D21	Bostanu		See D20.	5246	2723	18
D22	Bostanu		See D20.The Site Card also contains the sub-heading 'Samarin'.	5246	2723	7
D23			Not located. The Site Card also contains the sub-heading 'includes D11-23'.			0
D24			Not located.			0
D25	Sirjan		The location of Sirjan is given by Morgan & Leatherby (1987: 25, pl. 1).	5546	2923	0
D26			Not located.			0
D28			Not located.			0
D29	Shiwu	See D15	See D15.	5308	2704	4
D30	Neran		See D13.	5316	2702	29
D34	Sirjan		The location of Sirjan is given by Morgan & Leatherby (1987: 25, pl. 1).	5546	2923	0
D87			Not located.			1
D89			Not located.			1
E1			Not located.			0
E2			Not located.			0
E3			Not located.			0
E5			Not located.			0
E7			Not located.			0
F1			Not located.			0
F2	Shilau		The location of Shilau is given as 4 miles West of Tahiri (Adamec, 1989: 687; C & S: 198).	5220	2739	9
F3	Shilau		See F3.	5220	2739	4
F4	Shilau		See F3.	5220	2739	1
F5	Shilau		See F3.	5220	2739	7
F6	Shilau		See F3.	5220	2739	29
F7	Shilau		See F3.	5220	2739	26
F8			Not located.			0
F9			Not located.			0
F10	Siraf	Tahiri	The site is described as lying just to	5221	2742	36

			west of the modern town of Tahiri (Whitehouse, 1967: 141; Adamec, 1989: 729; USBGN: 528).			
F11	Akhtar		The location of Akhtar is given by Adamec (1989: 28), however the Northing given of 2741 is marked as 2742 on the TPC (Sheet H-6C). Inconsistencies elsewhere in Adamec suggest that the TPC information should be preferred.	5214	2742	3
F12	Akhtar		See F12.	5214	2742	16
F13	Akhtar		See F12.	5214	2742	14
F14	Akhtar		See F12.	5214	2742	8
F15	Akhtar		See F12.	5214	2742	2
F16	Akhtar		See F12.	5214	2742	13
F17	Akhtar		See F12.	5214	2742	0
F18	Akhtar		See F12.	5214	2742	5
H1	Bushehr	Bushire	Equivalent versions of the place name, including Bushehr and Bushire are listed and their location is given (USBGN: 448).	5050	2859	0
H2	Bushehr	See H1	See H1.	5050	2859	0
H3	Bushehr	See H1	See H1.	5050	2859	5
H4	Bushehr	See H1	See H1.	5050	2859	3
H5	Bushehr	See H1	See H1.	5050	2859	11
H6	Bushehr	See H1	See H1.	5050	2859	0
H7	Bushehr	See H1	See H1.	5050	2859	2
H8	Bushehr	See H1	See H1.	5050	2859	6
H9	Bushehr	See H1	See H1.	5050	2859	1
H10	Rishahr		The location of Rishahr is given by USBGN (448).	5050	2855	0
H11	Rishahr		See H10.	5050	2855	0
H12	Rishahr		See H10.	5050	2855	0
H13			Not located.			0
H14			Not located.			0
H15			Not located.			1
H16			Not located.			2
H17	Rishahr		See H10.	5050	2855	154
H18	Rishahr		See H10.	5050	2855	21
H19	Rishahr		See H10.	5050	2855	51
H20	Rishahr		See H10.	5050	2855	309
H21	Tangac	Tangak, Tangak-e Safari	There is a small fort and village referred to as Tangak-e Safari located close to the edge of the Mashileh swamp, the position of which is given. However there are also two villages with the name Tangak located one and two miles to the south (Adamec, 1989: 735).	5053	2856	2
H22	Tangac	See H21	See H21.	5053	2856	11
H23	Tangac	See H21	See H21.	5053	2856	0
H24			Not located.			0
H25	Gharibou	Tangak-e Mohamm	It is not possible to identify the toponym Gharibou though Williamson	5053	2854	4

		ad Ja'far	states that "Gharibou, Tangac and next one all have same name today as Tangac" (Williamson, 1969-70: 215). The next town is Zangina therefore by a process of elimination the position of the town can be identified at Tangak-e Mohammad Ja'far (Adamec, 1989: Map Sheet 43-B).			
H26	Gharibou	See H25	See H25.	5053	2854	2
H27	Gharibou	See H25	See H25.	5053	2854	0
H28	Gharibou	See H25	See H25.	5053	2854	0
H29	Gharibou	See H25	See H25.	5053	2854	1
H30			Not located.			3
H31	Sabzabad		The location of Sabzabad is given as "6 miles South of Bushehr, 1 mile East of Rishahr foot and quarter of a mile South of Imamzadeh" (Adamec, 1989: 630).	5052	2854	8
H32	Sabzabad		See H31.	5052	2854	0
H33	Sabzabad		See H31.	5052	2854	6
H34	Sabzabad		See H31.	5052	2854	17
H35	Sabzabad		See H31.	5052	2854	1
H36	Sabzabad		See H31.	5052	2854	6
H37	Sabzabad		See H31.	5052	2854	0
H38	Gharibou	See H25	See H25.	5053	2854	34
H39	Sabzabad		See H31.	5052	2854	0
H40	Sabzabad		See H31.	5052	2854	29
H41	Sabzabad		See H31.	5052	2854	14
H42	Sabzabad		See H31.	5052	2854	21
H43	Sabzabad		See H31.	5052	2854	0
H44	Sabzabad		See H31.	5052	2854	44
H45	Sabzabad		See H31.	5052	2854	7
H46			Not located.			1
H55	Zangina	Tangak-e Zangeneh	An equivalent version of the place name, Tangak-e Zangeneh, is marked (Adamec, 1989: Map Sheet 43-B).	5053	2853	22
H56	Zangina	See H55	See H55.	5053	2853	1
H57	Zangina	See H55	See H55.	5053	2853	4
H58	Zangina	See H55	See H55.	5053	2853	1
H59	Zangina	See H55	See H55.	5053	2853	0
H61	Halileh	Heleyleh	An equivalent version of the place name, Heleyleh, is marked (TPC Sheet H-6B).	5054	2850	14
H62	Halileh	See H61	See H61.	5054	2850	3
H63	Halileh	See H61	See H61.	5054	2850	16
H64	Halileh	See H61	See H61.	5054	2850	25
H65	Halileh	See H61	See H61.	5054	2850	28
H66	Halileh	See H61	See H61.	5054	2850	1
H67	Halileh	See H61	See H61.	5054	2850	0
H68	Halileh	See H61	See H61.	5054	2850	12
H69	Halileh	See H61	See H61.	5054	2850	2
H70	Halileh	See H61	See H61. The Site Card contains the caption 'middle site Halileh. Collected 1970, recollected under different	5054	2850	16

			numbers 1971'.			
H71			Not located.			4
H72			Not located. The site card contains the caption 'c.90 hectare'.			6
H73			Not located. The site card contains the caption 'visited 1971'.			20
H74			Not located.			15
H75			Not located. The site card contains the caption 'collected 1971'.			10
H76			Not located. The site card contains the caption 'collected 1971'.			21
H77			Not located.			8
H78			Not located.			12
H79			Not located.			0
H80			Not located.			8
H81			Not located.			13
H82			Not located.			27
H83			Not located.			12
H84			Not located.			13
H85			Not located.			33
H86			Not located.			0
H90			Not located.			1
H91			Not located.			2
H92			Not located.			8
H93			Not located.			3
H94			Not located.			171
H95			Not located.			1
H99			Not located.			6
H200			Not located.			248
H201			Sherds from the sites were found together with two bag labels marked "H201A Sabzabad Pezard A" and "Tepe Pazard A Sabzabad 4 Bags", indicating that H201 can be associated with Pezard's 'Mound A' at Sabzabad.			14
J1	Nakhl-i-Nakhoda	Nakhl Nakhuda	An equivalent version of the place name, Nakhl Nakhuda, is identified as a village that now forms a suburb of Bandar Abbas. The location of this is given (Adamec, 1988: 327).	5621	2712	24
J2	[Nakhl-i-Nakhoda]	See J1.	No toponym is available for J2, however the site code falls between J1 and J3-4 which all belong to Nakhl-i-Nakhoda. It is therefore likely that J2 belongs to the same group of sites. See J1.	5621	2712	4
J3	Nakhl-i-Nakhoda	See J1	See J1.	5621	2712	21
J4	Nakhl-i-Nakhoda	See J1	See J1.	5621	2712	1
J5			Not located.			1
J6			Not located.			3
J10	Suru		Suru is identified as a village that now forms a suburb of Bandar Abbas and	5614	2710	3

			the location on this is given (Adamec, 1988: 439).			
J11	Suru		See J10.	5614	2710	2
J15	Bandar Abbas Shaghu	Shaqu	An equivalent version of the place name, Shaqu, is marked but not listed (Adamec, iv.1988: Map Sheet 27-C).	5622	2714	1
J16	Esin	Isin	The place name Isin is marked but not listed (TPC Sheet H-7D).	5617	2719	5
J17	Esin	See J16	See J16.	5617	2719	4
J18	Esin	See J16	See J16.	5617	2719	22
J19	Tepe Gachin	T. Gachin	The location of Gachin is given by Adamec (1988: 143), but there is another smaller village, Gachin Zir, located two miles to the south (Adamec, 1988: 409).	5552	2708	13
J20	Bandar Abbas		The location of Bandar Abbas is marked (TPC Sheet H-7D).	5617	2712	50
J30			Not located.			1
J38			Not located.			1
K1	Minab Sarcam	Sarkam	The "site [is] cut by [the] road from it to Shah Mansur and Tombac" (Williamson, Site Card 3: 40). An equivalent version of the place name, Sarkam, is marked, and a position towards Tombac has been given (Adamec, 1988: Map Sheet 28-C).	5702	2711	9
K2	Minab Sarcam	See K1	See K1.	5702	2711	4
K3	Minab Makian		Not located.			10
K4	Minab Darkhaneh		Not located.			4
K5	Minab Payeziarat		Not located.			0
K6	Tiab	Teyab	An equivalent version of the place name, Teyab, is listed (Adamec, 1988: 448), however the Easting given of 5653 is marked as 5652 on the TPC (Sheet H-7D). Inconsistencies elsewhere in Adamec suggest that the TPC information should be preferred.	5652	2707	2
K7	Kulahi	Kolahi	An equivalent version of the place name, Kolahi, is marked (TPC, Sheet H-7D).	5652	2704	1
K8	Kulahi	See K7	See K7.	5652	2704	3
K9	Mazigh	Mazegh Pa'in	The site is situated 500m to the west of Mazegh (Williamson, Site Card, 3: 56). An equivalent version of the place name, Mazegh Pa'in, is marked (Adamec, 1988: Map Sheet 27-D).	5654	2706	7
K10	Mazigh	See K9	See K9.	5654	2706	6
K11	Mazigh	See K9	See K9.	5654	2706	2
K12	Mazigh	See K9	See K9.	5654	2706	9
K13	Mazigh	See K9	See K9.	5654	2706	2
K14	Tepe Dehu	Dehu	The location of Dehu is given as "10	5654	2707	7

			miles West by South of Minab Town on the road to its port Tiyab" (Lorimer, 1908: 1214).			
K15	Tepe Dehu	See K14	See K14.	5654	2707	13
K16	Minab Darkhaneh		Not located.			6
K17	Deh Ali & Kolebi		Not located.			93
K18	Kolu		Not located.			0
K19	Hadjiabad		The location of Hadjiabad is described as being "10 miles West by North of Minab Town" (Lorimer, iib.1908: 1217). The location is also given by Adamec (1988: 171).	5656	2710	4
K20	Mashiran	Mashihran	An equivalent version of the place name, Mashihran, is described as being "6.5 miles West by North of Minab Town" (Lorimer, iib.1908: 1221). The location is also marked (Adamec, 1988: Map Sheet 27-D).	5658	2710	23
K21	Mashiran	See K20	See K20.	5658	2710	1
K22	Mashiran	See K20	See K20.	5658	2710	102
K23	Mashiran	See K20	See K20.	5658	2710	62
K24	Mashiran	See K20	See K20.	5658	2710	31
K25	Mashiran	See K20	See K20.	5658	2710	9
K26	Gulshavar	Golacvar Gulshauar Goleshvar	The place name Golacvar is located 9km W or E of Minab, on the main road to Tiab (FIJ, 1953: 359). What appears to be the same place is marked as Gulshauar and Goleshvar (Adamec, 1988: Map Sheet 28-C).	5702	2709	32
K27	Mashiran	See K20	See K20.	5658	2710	4
K28	Mashiran	See K20	See K20.	5658	2710	14
K29	Nakhl Ibrahim	Nekhl-e Ebrahim	An equivalent version of the place name, Nekhl-e Ebrahim, is listed under an entry for Mugh Ibrahim and the location of this is marked (Adamec, 1988: 321, Map Sheet 27-D). The same location is given by P. Morgan (1991: fig. 2) based on information from ASIS.	5655	2708	23
K30	Nakhl Ibrahim	See K29	See K29.	5655	2708	19
K31	Dehu		See K14. The site is also listed by P. Morgan under the toponym Nakhl Ibrahim (1991: fig. 2), drawing from ASIS. There may be some confusion about whether to apply the place name Dehu or Nakhl Ibrahim to this site, as there are a group of sites that fall mid-way between the two villages (Kennet *et al*, Forthcoming).	5654	2707	25
K32	[Nakhl Ibrahim]		The Site Card for K32 has no toponym, however P. Morgan identifies the site as part of the Nakhl Ibrahim group,	5655	2708	14

			based on information from ASIS (1991: fig. 2). See K29.			
K33	Megh Ibrahim	Mugh Ibrahim	An equivalent version of the place name, Mugh Ibrahim, is given as being "11 miles West by South of Minab Town" (Lorimer, 1908: 1222). The site is also listed under the toponym Nakhl Ibrahim (P. Morgan, 1991: fig. 2) based on ASIS. This discrepancy is not important though as the two names appear to be related to the same place.	5653	2707	11
K34	[Nakhl Ibrahim]		See K32.	5655	2708	10
K35	[Nakhl Ibrahim]		See K32.	5655	2708	5
K36	[Nakhl Ibrahim]		See K32.	5655	2708	75
K37			Not located.			19
K38			Not located.			4
K39			Not located.			12
K40	Hakemi		The location of Hakemi is given as being "4 miles Northwest of Minab town" (Lorimer, 1908: 1218). Its position is also marked on an unmarked 1: 50,000 map tracing (Middle Sheet) discovered in the Collection Archive. The Site Card for K40 also has the caption 'kiln site'.	5701	2711	20
K41	[Hakemi]		No toponym is available for K41, however the site code falls between K40 and K42-3 which all belong to the Hakemi toponym. It is therefore likely that K41 belongs to the same group of sites. See K40.	5701	2711	2
K42	Hakemi		See K40.	5701	2711	10
K43	Hakemi		See K40.	5701	2711	3
K44			Not located.			67
K45			Not located.			6
K46	T. Qaleh Kucheck		Not located.			39
K47	T. Qaleh Kucheck		Not located.			62
K48			Not located.			12
K49			Not located.			1
K50			Not located.			19
K51	Minab Sarcam	See K1	See K1.	5702	2711	20
K52			Not located.			4
K53			Not located.			3
K54	Hakemi		See K40.	5701	2711	3
K55			Not located.			5
K56	Payeziarat	Paziarat	The toponym given on the Site Card for K56 is Paziarat, however site K5 (Minab Payeziarat) is likely to belong to the same group and the latter is more			13

			likely to be the correct spelling. Site not located.			
K57	Payeziarat	See K56	See K56.			24
K58	Minab Makian	Makian	Not located.			25
K59			Not located.			3
K60			Not located.			0
K61			Not located.			0
K62	Mashiran	See K20	See K20.	5658	2710	76
K63	Mashiran	See K20	See K20.	5658	2710	2
K64	Mashiran	See K20	See K20.	5658	2710	5
K65	Hakemi		See K40.	5701	2711	30
K66	Dehu		See K14.	5654	2707	5
K67	Hakemi		See K40.	5701	2711	12
K68	Hakemi		See K40.	5701	2711	10
K69	Hakemi		See K40.	5701	2711	9
K70	Tiab	See K6	See K6.	5652	2707	20
K71			Not located.			4
K72			Not located.			20
K73			Not located.			5
K74			Not located.			9
K75			Not located.			9
K76			Not located.			5
K77			Not located.			7
K78			Not located.			7
K79			Not located.			10
K80			Not located.			3
K81			Not located.			1
K82			Not located.			4
K83			Not located.			10
K84			Not located.			77
K85			Not located. The Site Card is marked with the caption 'Islamic component of an early site'.			9
K86			Not located.			1
K87			Not located.			3
K88			Not located.			2
K89			Not located.			3
K90			Not located.			1
K91			Not located.			5
K92			Not located.			2
K93			Not located.			7
K94			Not located.			3
K95	[Alt Hormoz Tepe]		The Site Card for K95 has no toponym, however P. Morgan identifies the site as Alt Hormuz Tepe and provides its location based on information from ASIS (1991: fig. 2).	5658	2705	4
K96	[Alt Hormoz Tepe]		See K95.	5658	2705	7
K97	[Alt Hormoz Tepe]		See K95.	5658	2705	26

K98	[Alt Hormoz Tepe]		See K95.	5658	2705	13
K99	[Alt Hormoz Tepe]		See K95.	5658	2705	3
K100	[Alt Hormoz Tepe]		See K95.	5658	2705	38
K101			Not located.			3
K102			Not located.			540
K103	[Tepe Chahah]		The Site Card for K103 has no toponym, however P. Morgan identifies the site as Tepe Chahah (Old Hormuz) and provides its location based on information from ASIS (1991: fig. 2).	5657	2701	675
K104			Not located.			84
K105			Not located.			38
K106			Not located.			7
K107			The Site Card for K107 has no toponym, however P. Morgan provides a probably location based on information from ASIS (1991: fig. 2).	5657	2659	184
K108			Not located.			51
K109			Not located.			11
K110			Not located.			32
K111			Not located.			3
K112			Not located.			6
K113			Not located.			0
K114			Not located.			1
K115			Not located.			2
K116			Not located.			8
K117			Not located.			0
K118			Not located.			0
K119			Not located.			16
K120			Not located.			15
K121			Not located.			20
K122			Not located.			11
K123			Not located.			1
K124			Not located.			80
K125			The position of the site is marked on an annotated map marked Type 2 Londo Ware' identified in the Collection Archive. The Site Card is marked with the caption 'Islamic component of an earlier site'.	5702	2658	36
K126			Not located. The Site Card is marked with the caption 'Islamic component of an earlier site'.			89
K127			Not located.			0
K128			Not located.			3
K129			Not located.			0
K130	Saravan	Sarbaran,	A village by the name of Sarbaran is	5659	2711	281

		Surahan	located 15km West of Minab on the road from Minab to Bandar 'Abbas (FIJ, 1953: 231). The same place also appears as Surahan (USBGN: 470). Either of these place names could be equivalent to Saravan and their location is given.			
K131	Saravan	See K130	See K130.	5659	2711	113
K133			Not located.			33
K134			Not located.			2
K135			Not located.			2
K136			Not located.			4
K137			Not located.			8
K138			Not located.			17
K139			Not located.			2
K140			Not located.			3
K141	T. Majbun	Majbun	The location of Majbun is given as "1 mile from the left bank of the Mazavi stream at 4 miles above Dahi Qand" (Lorimer, iib.1908: 1221). A position estimated from this description is given.	5715	2655	57
K142			Not located.			0
K143	Gishnau	Gishnar, Tonbak-e Pa'in, Tappa-i-surkh	A possible equivalent of the place name, Gishnar or Tonbak-e Pa'in, is listed (USBGN: 183), however this toponym seems to be different from that provided by Williamson. P. Morgan, drawing on information from ASIS places K143 at the same location, but under the place name Tappa-i-surkh (1991: fig. 2).	5658	2706	59
K144	[Tappa-i Surkh]		The Site Card for K144 has no toponym, however P. Morgan identifies the site as Tappa-i Surkh and provides its location based on information from ASIS (1991: fig. 2).	5658	2706	1
K145	T.Gishnu		The Site Card for K145 has no toponym, however a single sherd from K145 is marked "T. Gishnu" (Sherd +14700). This, this may contradict the information provided by P. Morgan based on ASIS, which suggests that the site name is Tappa-i surkh (1991: fig. 2), although the information from K143 suggests that Tappa-i surkh and Gishnu/Gishnau may be synonymous. The location on K145 is given on an annotated map marked 'Type 2 Londo Ware' discovered in the Collection Archive.	5658	2708	117
K146	[Tappa-i surkh]		See K144.	5658	2706	12
K147	[Tappa-i surkh]		See K144.	5658	2706	17

K148			Not located.			7
K149			Not located.			17
K150			Not located.			15
K151			Not located.			0
K152			Not located.			1
K153			Not located.			50
K154			Not located.			77
K155			Not located.			1
K156			Not located.			1
K157			Not located.			7
K158			Not located.			24
K159			Not located.			9
K160			Not located.			0
K161	Kuhistak	Kuhestak	An equivalent version of the place name, Kuhestak, is given as "25 miles South Southwest of Minab Town" (Lorimer, 1908: 1220) and its position is marked (TPC Sheet H-7D).	5702	2648	34
K162	Minab		The location of Minab is marked (TPC Sheet H-7D). The Site Card for K162 is marked with the sub-heading 'Qaleh', suggesting that the site is the Qaleh of Minab.	5705	2708	4
K163	Kuhistak	See K161	See K161.	5702	2648	2
K169	Tepe Dehu		See K14.	5654	2707	3
K170	Minab		See K162. The Site Card for K170 is marked with the caption 'Sasanian and 2nd ? site'.	5705	2708	363
K173			Not located.			1
K176			Not located.			3
K177			Not located.			2
K178			Not located.			0
K179			Not located.			42
K180			Not located.			3
K181			Not located.			8
K182			Not located.			1
K183			Not located.			1
K184			Not located.			4
K185			Not located.			1
K186			Not located.			5
K187			Not located.			1
K188			Not located.			0
K189			Not located.			7
K190			Not located.			2
K191			Not located.			5
K192			Not located.			1
K193			Not located.			3
K194			Not located.			0
K195			Not located.			15
K196			Not located.			0
K197			Not located.			2
K198			Not located.			25
K199			Not located.			0
K200			Not located.			1

K201			Not located.			0
K203			Not located.			2
K204	Kuhistak	See K161	See K161.	5702	2648	39
K205			Not located.			3
K207			Not located.			2
K208			Not located.			13
K209			Not located.			4
K210			Not located.			5
K211	Shamil		The site is located "near Shamil on the Shrin Rud" and "100m to East of river + 1.90km from junction of river bellow Shamil (Site Card 3: 420). Shamil is located "42 miles East by Northeast of Bandar 'Abbas" (Lorimer, iib.1908: 1723) and its position is marked (TPC Sheet H-7D).	5651	2729	213
K212			Not located. The Site Card is marked with the caption 'flat site'.			23
L1	Sirik		The location of Sirik is given by Adamec (1988: 432).	5706	2631	9
L2	Sirik		See L2.	5706	2631	7
L3	T. Guru	Gru, Goruk	The location of Guru is given by Adamec (1988: 167). An equivalent version of the place name, Gru, is described as a small village with a painted white fort (C & S: 144) and further version of the place name, Goruk, is marked (TPC Sheet H-7D).	5705	2635	4
L4	Jask		The location of Jask is given by Adamec (1988: 199). The Site Card for L4 is marked with the caption 'kilns on the road to Jask'.	5746	2539	6
L5	Loran	Luran	An equivalent version of the place name, Luran, is listed and the location of this is given (Adamec, 1988: 275).	5748	2539	1
L6			Not located.			3
L7	Jask		See L4. The Site Card for L7 is marked with the caption 'site on the road to Old Jask'.	5746	2539	6
L8	Jask		See L4.	5746	2539	2
L23			Not located.			3
P1	[Shahr-i-Daqianus]		The Site Card for P1 has no toponym, however the assemblage is large and includes a few early East Asian imports that are rare on inland sites, suggesting that the site may be one of some importance. In fact Williamson's assemblage bears a number of similarities with Stein's collection from one of the largest sites within the area, Shahr-i-Daqianus, both in terms of the overall chronological profile and the presence of manufacturing evidence for an identical type of moulded ewer (MEW.LG) (personal	5744	2839	1028

			observation based on a study of Stein's Iranian finds in the Ancient Near East and Asia departments of the British Museum). As a result it seems highly probable that P1 can be identified with Shahr-i-Daqianus and the location for this site has been given (Stein, 1937: 151-57, map II, sec. II).			
P2			Not located.			15
P3			Not located.			11
P4	Qaleh ?		Not located.			0
P5	Gust-Burjan	Bijnabad, Bijebabad Bizhanab-ad	For P5 Prickett uses the toponym Bijnabad (Prickett, 1986a: 1273), which is different to that marked on the Site Cards. Further equivalent versions of the place name, Bijebabad and Bizhanabad, are listed and their location is given (USBGN: 76).	5801	2756	69
P6	Gust-Burjan	See P5.	See P5. The precise position of P6 is 300m Southeast by South from P5 (Site Card 2: 162).	5802	2757	149
P7	Tump-i Qala-i Kuckak	Qal'a-i Kuchik	The location of Tump-i Qala-i Kuckak is given as 5 miles Northwest of Kunar Sandal (Stein, 1937: 150). The same site name is given as Qal'a-i Kuchik by Prickett (1986a: 1273). The position of the place name is marked (Adamec, 1988: Map Sheet 21-D).	5744	2830	82
P8	Kunar Sandal	Konar Sandal	An equivalent version of the place name, Konar Sandal, is given as "c.23.5 km south of Sabzavaran" (Prickett, 1986a: 1274). The position of the place name is marked (Adamec, 1988: Map Sheet 21-D).	5747	2828	72
P9	Kunar Sandal	See P8	See P8.	5747	2828	0
P10	Tump-i Huseinabad	Hoseyna-bad	The location of Tump-i Huseinabad is given by Prickett (1986a: 1274). An equivalent version of the place name, Hoseynabad, is also marked (Adamec, 1988: Map Sheet 21-D).	5743	2820	3
P11	Khanuj	Khanu	Khanuj is described by Prickett (1986a: 1274). An equivalent version of the place name, Khanu, is listed and the location of this is given (USBGN: 283).	5745	2758	18
P12	Khanuj	Khanu	See P11.	5745	2758	11
P13	Tump-i Kharg	Tum-e Khvark	Tump-i Kharg is described by Prickett (1986a: 1275). An equivalent version of the place name, Tum-e Khvark, is listed and the location of this is given (USBGN: 548).	5755	2803	86
P14	Tump-i Kharg	See P13	See P13.	5755	2803	10
P15	Tump-i		Tump-i Namurdi is described by	5802	2801	38

	Namurdi		Prickett (1986a: 1275). P15 is located "2 miles North, Northwest of Gust-i Birjan" (Site Card 2: 173).			
P16	Tump-i Namurdi	T.-i-Namurdi	Tump-i Namurdi is described by Prickett (1986a: 1275). P16 is located "0.5 mile Southwest of Tump-i Namurdi" e.g. P15 (Site Card 2: 174).	5802	2801	69
P17	Tump-i Hazar-Mardi		The location of Tump-i Hazar-Mardi is given by Stein (1937: 143-44, map II, sec. III).	5759	2800	79
P18	Tump-i Surkh	Tom-e Sorkh	Tump-i Surkh is described by Prickett (1986a: 1276). An equivalent version of the place name, Tom-e Sorkh, is listed and the location of this is given (USBGN: 548).	5804	2744	76
P19	Surkh-Qalat	Sorkh Kalat	Surkh-Qalat is described by Prickett (Prickett, 1986a: 1276). An equivalent version of the place name, Sorkh Kalat, is marked (Adamec, 1988: Map Sheet 28-C). The site is also described as being c.9km beyond Qalat-i Surkh (Site Card 2: 175); a location that fits with the other information.	5756	2853	76
P20	Qalat-i Ganj	Qal'eh Ganj	An equivalent version of the place name, Qal'eh Ganj, is marked (TPC Sheet H-7D).	5731	2731	0
P50			Not located.			1
Q1	Nasirabad		Not located.			0
Q2	T. Cheraghabad	Charagha bad	The location of T. Cheraghabad is given by Prickett (1986a: 1277). An equivalent version of the place name, Charaghabad, is marked (Adamec, 1988: Map Sheet 28-C).	5727	2713	83
Q3	T. Cheraghabad		See Q2.	5727	2713	97
Q4	T. Cheraghabad		See Q2.	5727	2713	22
Q5	T. Cheraghabad		See Q2.	5727	2713	46
Q6	Jangin	Jagin, Qal'a Jangin	Site Q6 is referred to by Prickett as Qal'a Jangin (1986a: 1279). The same place name, given as Jagin, is said to be located at E5725/N2712 (Adamec, 1988: 193), however it is marked differently on the TPC (Sheet H-7D). Inconsistencies elsewhere in Adamec suggest that the TPC information should be preferred.	5720	2713	11
Q7	Jangin	See Q6	See Q6.	5720	2713	8
Q8	Jangin	See Q6	See Q6.	5720	2713	15
Q9	Manujan		The location of Manujan is given by USBGN (337), however the Easting is	5730	2724	26

			marked differently (TPC Sheet H-7D). The latter source is more recent and therefore the TPC location has been given.			
Q10	Manujan		See Q9.	5730	2724	12
Q11	Manujan		See Q9.	5730	2724	0
Q12	Manujan		See Q9. The site is described by Prickett (1986a: 1280). The Site Card is marked with the caption 'Islamic...? of small earlier site'.	5730	2724	5
Q15	T. Bikar		The location of Bikar is marked (TPC Sheet H-7D).	5711	2721	1
Q16	T. Bikar		See Q15.	5711	2721	4
Q17	[Tepe Mauru]		The Site Card for Q17 has no toponym, however Prickett records the site as Tepe Mauru and describes the location as being on the East bank of the Rud-i Rudan 9km South of Dih Bariz and close to Kumis (Prickett, 1986a: 1280). A position estimated from this description has been given.	5713	2720	228
Q18	[Tepe Mauru]		See Q17.	5713	2720	4
Q19	[Tepe Mauru]		See Q17.	5713	2720	7
Q20	[Mauru]		The Site Card for Q20 has no toponym, however Prickett records the site as Mauru (1986a: 1281), which presumably has the same location as Q17.	5713	2720	44
Q21	Kumiz	Qal'a Kumis, Komiz	The site name for Q21 is recorded by Prickett as Qal'a Kumis (Prickett, 1986a: 1280). A further variant of the name, Komiz, is listed and the location of this is given (USBGN: 312).	5715	2722	18
Q22	[Kumiz]	See Q21	See Q21. The Site Card for Q22 has no toponym, however the site name Qal'a Kumis, is provided by Prickett within the discussion of Q18 (Prickett, 1986a: 1280).	5715	2722	12
Q23	T. Sutan Miri		Not located.			0
Q25	Tepe Ziarat Gulashgird	Tepe Ziyerat, Zeyarat	The site name for Q25 is recorded by Prickett as Tepe Ziyerat (Prickett, 1986a: 1281). An equivalent version of the place name, Zeyarat, is marked (TPC Sheet H-7D).	5716	2752	53
Q26	[Tepe Ziarat]	Tepe Ziyerat, Zeyarat	See Q25. The Site Card for Q26 has no toponym, however the Site Code falls between Q25 and Q27 that were both assigned to Tepe Ziarat (Prickett, 1986a: 1281-2). It is therefore likely that Q26 belongs to the same site group.	5716	2752	28

Q27	Tepe Ziarat Ali Gulashgird	Zeyarat-e 'Ali, Tepe Ziyerat 'Ali	The site name for Q27 is recorded by Prickett as Tepe Ziyerat 'Ali (Prickett, 1986a: 1282). An equivalent version of the place name, Zeyarat-e 'Ali, is marked (Adamec, 1988: Map Sheet 28-A).	5713	2745	1
Q28	[T. Hissar]		The Site Card for Q28 has no toponym, however the site name, T. Hissar, is provided by Prickett, who describes the site as being located c.3km Northwest of Darrashur at an elevation of 580m (Prickett, 1986a: 1282). A position estimated from this description is given.	5713	2804	104
Q30	T. Hissar		See Q28.	5713	2804	119
Q32	Danial Gulashgird	Golackerd Golashke-rd	An equivalent version of part of the place name, Golackerd, is recorded as being 50km East of Kahnuj in the province of Jiroft (FIJ, 1953: 358). Another variant of the same name, Golashkerd, is listed and the location of this is given (USBGN: 185). The second part of the name given by Williamson, Danial, could refer to some feature in the town itself.	5716	2759	140
R6			The site has no toponym, however the location is marked (Prickett, 1986a: 1131, fig. 6.1).	5637 3	2821 3	1
R15			See R6.	5637	2825	11
R20			See R6.	5636	2823	4
R21			See R6.	5636	2820	41
R26			See R6.	5635	2821	1
R27			See R6.	5636	2819	12
R28			See R6.	5636	2819	1
R52			Not located. The Site Card is marked with the caption '?...ated Sasanian ?...ding'.			0
R57			Not located. The Site Card is marked with the caption '?...fort'.			0
R58			Not located. The Site Card is marked with the caption '?...R57 fort, Sasanian form'.			0
R59			Not located. The Site Card is marked with the caption 'Sirjani sgaff'.			0
R60			Not located. The Site Card is marked with the caption 'Samara form'.			0
R61			Not located. The Site Card is marked with the caption '9-13c'.			0
R62			Not located.			0
R63			Not located. The Site Card is marked with the caption 'Sanan (?) occupation'.			0
R64			Not located. The Site Card is marked with the caption '?...farm/fort'.			0
R65			Not located. The Site Card is marked with the caption '?...sherd'.			0

R66			Not located. The Site Card is marked with the caption 'Fort'.			0
R67			Not located. The Site Card is marked with the caption 'mounded kiln'.			0
R68			Not located.			0
R69			Not located. The Site Card is marked with the caption 'Sirjani kilns, Mill race, Islamic fort'.			0
R70			Not located. The Site Card is marked with the caption 'Sam fort'.			0
R71			Not located. The Site Card is marked with the caption 'Seljuk 1 ha'.			0
R72			Not located. The Site Card is marked with the caption 'Sasanian palace/temple/fort'.			0
R73			Not located. The Site Card is marked with the caption 'Sasanian fort'.			0
R75			Not located. The Site Card is marked with the caption 'Sasanian fort, Su...? to R75 fort'.			0
R77			Not located. The Site Card is marked with the caption 'hill fort, Sasanian buildings'.			0
R79			Not located. The Site Card is marked with the caption 'Sas fort'.			0
R80			Not located. The Site Card is marked with the caption 'Sasanian settlement'.			0
R81			Not located. The Site Card is marked with the caption 'Sasanian fort'.			0
R82			Not located. The Site Card is marked with the caption 'important gotch building where road bends'.			0
R83			Not located. The Site Card is marked with the caption 'Sasanian settlement/fort'.			0
R84			Not located. The Site Card is marked with the caption 'Sas fort'.			0
R85			Not located. The Site Card is marked with the caption 'main Sasanian cuts'.			0
R86			Not located. The Site Card is marked with the caption 'Sasanian settlement'.			0
R87			Not located. The Site Card is marked with the caption 'Hormuzi settlement'.			0
R88			Not located. The Site Card is marked with the caption 'Hormuzi fort. For location see R87 card'.			0
R89			Not located. The Site Card is marked with the caption 'second Hormuzi fort'.			0
R90			Not located. The Site Card is marked with the caption 'Dih Sheck Clah Tog'.			0
R91			Not located. The Site Card is marked with the caption 'cairns'.			0
R92			Not located. The Site Card is marked with the caption 'Sirjani fortress'.			0
R93			Not located. The Site Card is marked			0

			with the caption '11-13c...?'.			
R94			Not located. The Site Card is marked with the caption 'Sas[anian] watch tower'.			0
R95			Not located. The Site Card is marked with the caption 'Sas[anian] settlement'.			0
R96			Not located. The Site Card is marked with the caption 'Sasanian fort'.			0
R97			Not located. The Site Card is marked with the caption 'Sas[anian] occupation mound'.			0
R98			Not located.			0
R99			Not located. The Site Card is marked with the caption 'Sas[anian] hill fort'.			0
R100			See R6. The Site Card is marked with the caption 'cairns on Rd to Dih Sheck'.	5621	2821	1
R101			The Site Card for R101 has no toponym, however the site is described by Prickett as being located Northwest of Qal'a Nau-Furg and 1km West of the ruined fortified village of ?Bini (1986a: 1249). The site itself may be marked at Qal'eh Now where there are a group of ruins (Adamec, iii.1989: Map Sheet 48-C). Adamec's location has been given.	5511	2819	646
R102	Forg		The location of Forg is given as 80m South of R101 (Prickett, 1986a: 1249). See R101.	5511	2819	19
R120			The Site Card for R120 has no toponym, however the site is described by Prickett as being located 7km Northwest of Ibrahimabad and 600 - 700m from the Ibrahimabad - 'Aliabad Rd. (1986a: 1247). The locations of these places are marked (Adamec, 1989: Map Sheet 41-D) and a position estimated from the description has been given.	5546	2917	80
R130			Not located. The Site Card is marked with the caption 'Southern hill fort'.			0
R131			Not located. The Site Card is marked with the caption 'Sas[anian] settlement'.			0
R132			Not located. The Site Card is marked with the caption 'Clah Tog (?)'.			0
R133			Not located. The Site Card is marked with the caption 'Sasanian fortress'.			0
R134			Not located. The Site Card is marked with the caption 'hill fort'.			0
R135			Not located. The Site Card is marked with the caption 'hill fort'.			0
S	Sirjan		The location of Sirjan marked (Morgan & Leatherby, 1987: 25, pl. 1).	5546	2923	368

SS1			The location of the individual sites within the Sirjan Survey is not known, however the position of Sirjan is marked (Morgan & Leatherby, 1987: 25, pl. 1).	5546	2923	2
SS11			See SS1.	5546	2923	133
SS18			See SS1.	5546	2923	1
SS23			See SS1.	5546	2923	6
SS25			See SS1.	5546	2923	89
SS26			See SS1.	5546	2923	1
SS30			See SS1.	5546	2923	22
SS34			See SS1.	5546	2923	28
SS35			See SS1.	5546	2923	14
SS36			See SS1.	5546	2923	64
SS38			See SS1.	5546	2923	9
SS39			See SS1.	5546	2923	1
SS40			See SS1.	5546	2923	17
SS41			See SS1.	5546	2923	32
SS49			See SS1.	5546	2923	4
SS50			See SS1.	5546	2923	8
V1	Mansurabad		More than one location is listed for Mansurabad, but only one of these falls within the relevant region. The location of this is given (USBGN: 336). The Site Card for V1 is marked with the caption 'plus two outcrops before it'.	5229	2942	2
V2	Qaleh Mansurabad		See V1.	5229	2942	14
V3	Mansurabad		See V1. The Site Card for V3 is marked with the caption 'just beyond Mansurabad ?...site'.	5229	2942	0
V4	Qaleh Mansura-bad		See V1.	5229	2942	10
V6			Not located.			1
V8	Ghir	Qir	The location of Ghir is given as 72km South of Firuzabad (FIJ, 1951: 179). An equivalent version of the place name, Qir, is marked (TPC Sheet H-7A).	5302	2828	27
V9	Q. Qaleh Ghir	Qir	See V8. Ademec notes that "above the village [of Qir] stands an earthen fort...", which is presumably the Qaleh of Qir (1989: 603).	5303	2829	78
V10	Q. Gabr Ghir	Qaleh Gabr Qir	See V8. The site name suggests that this is a tomb by the fort of Ghir.	5303	2829	2
V13	Nauruzan	Nowruzan	An equivalent version of the place name, Nowruzan, is listed and the location of this is given (USBGN: 380).	5245	2912	13
V14	Nauruzan	Nowruzan	See V13.	5245	2912	55
V15	Q. Paribn Ghir	Qaleh Paribn Qir	See V8. Presumably the place name is Qaleh Paribn Ghir.	5303	2829	8

V16	Garzine Gadim	Karzin Gadim	Gadim means old, so the town is Old Garzine, which is Located 8km West of Qir on the main road from Qir to Jahrom and Firuzabad (FIJ, 1951: 180). An equivalent version of the place name Garzine is listed, Karzin (USBGN: 269), and a location estimated from this point and the FIJ description has been given.	5309	2827	2
V17	Mubarakabad		More than one location is listed for Mubarakabad, but only one of these falls within the relevant region. The location of this is given by USBGN (364).	5357	2916	3
V18	Mubarakabad		See V17.	5357	2916	2
V20			Not located.			1
V21	Biriz	Beriz	An equivalent version of the place name, given as Beriz, can be identified as a village in the central part of the province of Lar, located 36km Northwest of Lar, on the road from Lar to Jahrom (FIJ, 1951: 28). The location of Beriz is given by USBGN (72).	5409	2752	13
V22	Hurmuzo	Hormuj	The place name Hormuzo could be Hormuj though the two are rather different. Hormuj is located in the Jahrom area 14km Southwest of Qotbabad (FIJ, 1951: 240). The location of Hormuj is marked (Adamec, 1989: Map Sheet 46-B).	5344	2833	8
V23	Soglam with Tama		Not located.			2
V24	Qasr Ahmet	Qasr-e Ahmad, Qasr Ahmad	Equivalent versions of the place name, including Qasr-e Ahmad and Qasr Ahmad are listed and their location is given (USBGN: 430).	5246	2910	2
V25	T. Gulbiranji	Tepe Gel Berenji	The site is situated in the sub-district of Khafr in the district of Jahrom, 7.5km Southeast of Bab-e Anar (FIJ, 1951: 202). An equivalent version of the place name, Tepe Gel Berenji, is marked (Adamec, 1989: Map Sheet 46-A).	5316	2855	2
V26			Not located.			10
V28			Not located.			24
V30	Cararamora Sargi		Not located.			0
V31	Shahabad		More than one location is listed for Shahabad, but only one of these falls within the relevant region. The location of this is given (USBGN: 484).	5305	2815	13
V32	T. Qaleh Bakird	Bakhard, Bigherd	An equivalent version of the place name, Bakhard, is listed, however the Easting given of 5338 (USBGN: 54) is	5337	2752	27

			marked differently at Bigherd on the TPC (Sheet H-7D). The latter source is more recent and therefore the TPC location has been given.			
V35	Sarcham Carar		Not located.			14
Z1	Rayin	Rayen	An equivalent version of the place name, Rayen, is listed, however the Northing given of 2934 (USBGN: 444) is marked differently on the TPC (Sheet H-7A). The latter source is more recent and therefore the TPC location has been given.	5726	2936	3
Z2	Rayin	Rayen	See Z1.	5726	2936	20
Z3	Rayin	Rayen	See Z1.	5726	2936	22
Z4	Rayin	Rayen	See Z1.	5726	2936	0
Z6	Tarikhistan	Tarikastan	An equivalent version of the place name, Tarikastan, is listed as an archaeological site and the location of this is given (USBGN: 444).	5810	2909	206
CUB			Not located.			11
ARR			Not located.			29
HOSA INEH			Not located.			1
IST	Istakhr		The location of Istakhr is given by Whitcomb (1979: 368).	5254	2958	27
KAZE RUN			The location of Kazerun is given by USBGN (273).	5138	2937	1
KHO BRIZ			Not located.			1
MAJB UN			Not located.			6
QAN	Qasr-i-Abu Nasr		Not located.			81
SALA L			Not located.			1
SOFL AN			Not located.			2
TAM ALAB M			Not located.			1
113	T. Zari		The location of the site has been plotted by Whitcomb (1979: 368).	5253	2942	1
324	Sistan		See 113.	5256	2944	1
369			See 113.	5250	2952	1
377			See 113.	5251	2954	1
384			See 113.	5251	2952	1
390			See 113.	5252	2950	2
393			See 113.	5251	2954	1
396	T Shaikh		See 113.	5250	2950	7
397			See 113.	5254	2954	7
399			See 113.	5256	2952	4
500	Bar Chenar - Abad	Tabas Gilaki	See 113. The second Site Card associated with site 500 has the	5244	2950	8

	Koreh		toponym Tabas Gilaki written on the back (Site Card 1: 485). The site may also be referred to by this name.			
501	Dasht-i-Bayad		See 113.	5245	2950	3
502	Ak Tepe	Junabad, Ak Tepe Junabad	See 113. The Site Card for site 502 has Junabad written on the back (Site Card 1: 487), the site may therefore be referred to as Ak Tepe, Junabad or Ak Tepe Junabad.	5240	2959	7
504	T. Shah Grabb		See 113.	5241	2957	1
507	Jarmaq	Jarma Q.	See 113. The toponym is not written clearly (Site Card 1: 490) and may be either Jarmaq or Jarma Q.	5239	3000	4
513			See 113.	5241	3002	4
514	Fulanak	Takinabad	See 113. The Site Card for site 514 has Takinabad written on the back (Site Card 1: 492), the site may therefore be referred to as Fulanak or Takinabad.	5240	2959	3
519			See 113.	5237	3003	4
531			See 113.	5239	2956	1
534			See 113.	5238	2953	1
536	Bust		See 113.	5241	2956	2
549			See 113.	5236	3007	2
551			See 113.	5232	3003	2
554	Talus		See 113.	5232	3005	1
555			See 113.	5231	3003	1
559	Khur		See 113.	5241	2934	5
560			See 113.	5240	2948	1
564	Kumbinan		See 113.	5236	2950	3
565			See 113.	5235	2951	1
567	Zurhuh	Zirkum	See 113. The toponym is not written clearly (Site Card 1: 369) and may be either Zurhuh or Zirkum.	5232	2953	1
570			See 113.	5237	3006	2
571			See 113.	5237	3006	1
577			See 113.	5235	3005	1
586			See 113.	5235	3005	1
590	T. Qab Ramtird		See 113.	5238	3007	1
593			See 113.	5235	3007	2
607			See 113.	5251	2956	1
616			See 113.	5251	3000	2
632			See 113.	5246	2951	3
633			See 113.	5248	2954	2
634			See 113.	5253	2959	2
638			See 113.	5248	2958	3
639			See 113.	5247	2558	1
644			See 113.	5250	2958	4
645			See 113.	5249	2956	3
665			See 113.	5246	2956	2
668			See 113.	5248	2958	2
678			See 113.	5243	3005	2

684			See 113.	5248	2959	1
806			Not located.			1
819			See 113.	5200	2930	1
3X1			See 113.	5245	2945	1
5A2			See 113.	5237	2954	1
5B1			See 113.	5247	2959	2
5B9			See 113.	5244	3001	1
5C5			See 113.	5241	2958	9
5C8			See 113.	5241	2958	1
5E2			See 113.	5239	2957	8
5E3			See 113.	5237	2955	5
5F3			See 113.	5235	2945	1
5G2			See 113.	5234	2957	1
5J2	Shabankar-ah		See 113.	5233	3003	3
5N7			See 113.	5236	2955	1
5T9			See 113.	5229	3005	1
5Y6			See 113.	5228	3000	1
V02			The site was apparently discarded (Williamson, 1969: 6) though the location of the site has been plotted (Whitcomb, 1979: 368). The Site Card is marked with the caption 'from prehistoric site painted'.	5200	2930	4
CT			See 113.	5200	2930	2
Karat-uui			See 113.	5200	2930	7
Qkhar			See 113.	5200	2930	4
Rahnau		Rahnuyeh	The sherd from Rahnau comes from a box containing Marv-Dasht Survey material. An equivalent version of the place name, Rahnuyeh, is listed and the location of this is given (USBGN: 441).	5301	2955	1

Table 16 *All of the known sites from the Williamson Survey derived from a combination of information taken from the sherd collection and Site Cards.*

APPENDIX IV - COLOUR PLATES

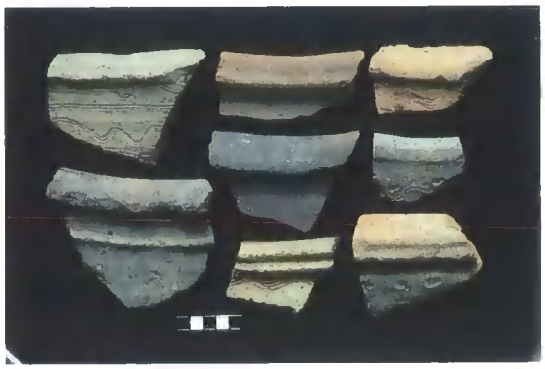

Plate 1 - LISV.A

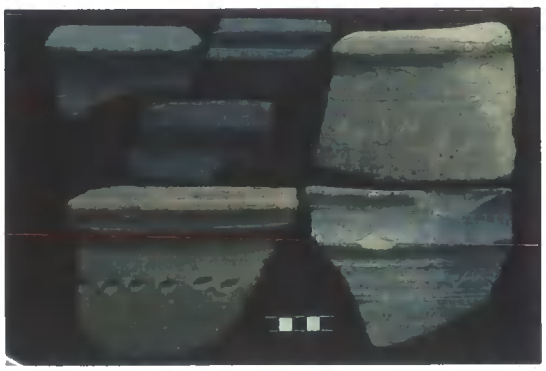

Plate 2 - LISV.B

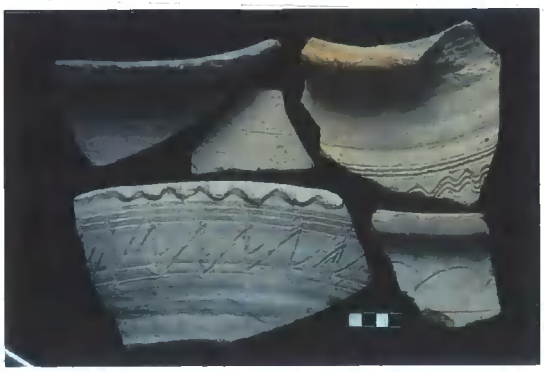

Plate 3 - LISV.FI

Plate 4 - GRIT.LV

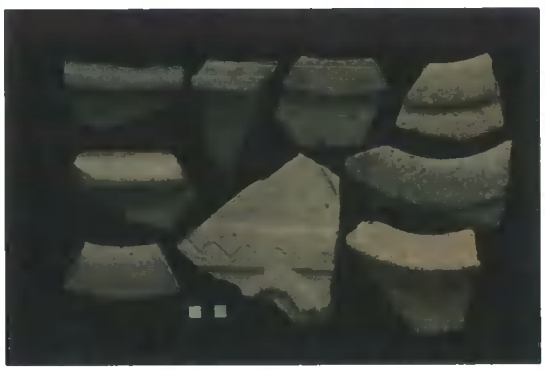

Plate 5 - FIG.LV

Plate 6 - GROG.LV

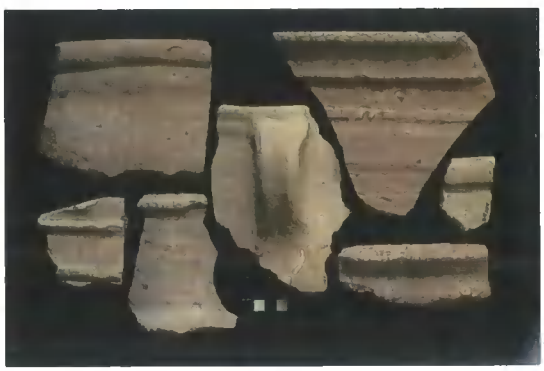

Plate 7 - FINT.LV

Plate 8 - SMAG.A (Jars)

Plate 9 - SMAG.A (bowls)

Plate 10 - SMAG.A (Jugs)

Plate 11 - CLINKY

Plate 12 - SMAG.B

Plate 13 - SMAG.C

Plate 14 - SMAG.RC

Plate 15 - GRIT

Plate 16 - FIG

Plate 17 - FINT

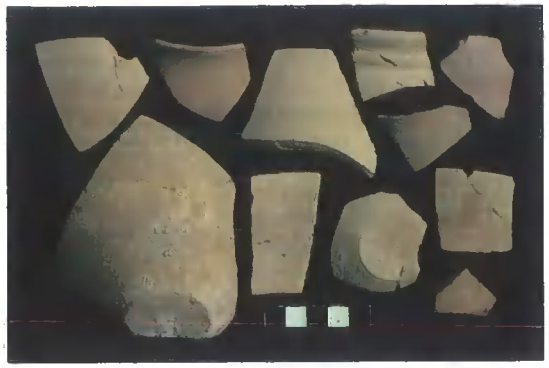

Plate 18 - FINT.B

Plate 19 - CORVIT

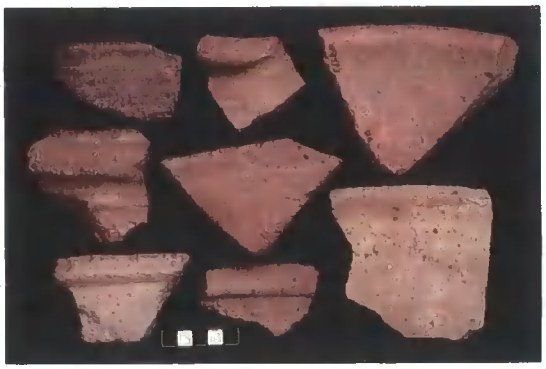

Plate 20 - VITFIG

Plate 21 - GROG

Plate 22 - ORG.H (Smaller Vessels)

Plate 23 - ORG.H (Larger Vessels)

Plate 24 - ORG.I (Smaller Vessels)

Plate 25 - ORG.I (Larger Vessels)

Plate 26 - ORG.S (Smaller Vessels)

Plate 27 - ORG.S (Larger Vessels)

Plate 28 - ORG.HS

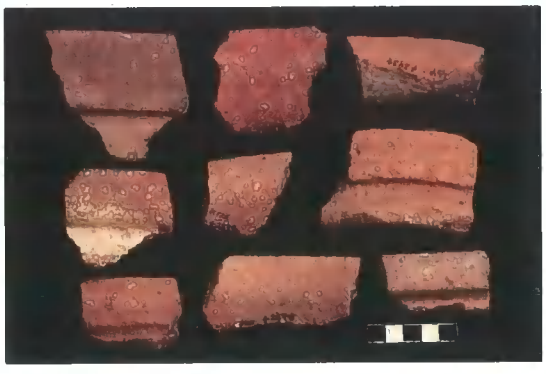

Plate 29 - LAG

Plate 30 - GIB

Plate 31 - SWIS

Plate 32 - CHAM.1

Plate 33 - CHAM.2

Plate 34 - CHAM.2 (Stamped Basses)

Plate 35 - CHAM.3

Plate 36 - CARFIG

Plate 37 - REL.LV

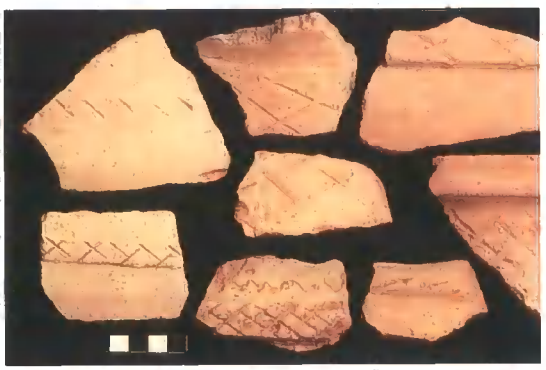

Plate 38 - CORD

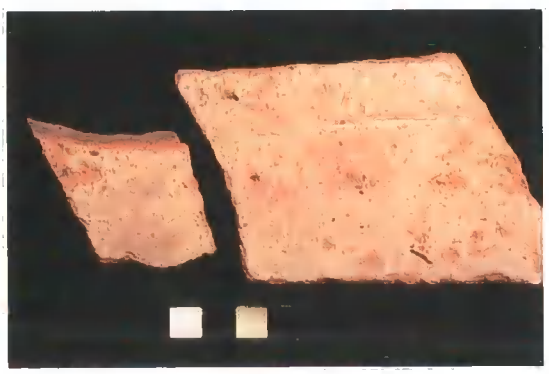

Plate 39 - WSUQ

Plate 40 - REBLAB

Plate 41 - SHABUR.A

Plate 42 - SHABUR.B

Plate 43 - FIGUR

Plate 44 - PAW.FC

Plate 45 - PAW.FO

Plate 46 - PAW.LV

Plate 47 - PAW.CC

Plate 48 - PAW.HC

Plate 49 - PAW.SCC

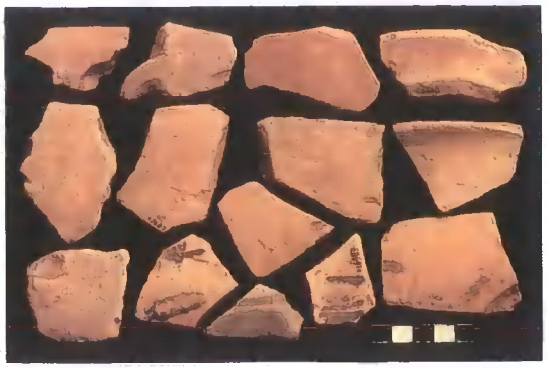

Plate 50 - PAW.SCY

Plate 51 - PAW.ORG

Plate 52 - PAW.RB

Plate 53 - PAW.BLR

Plate 54 - PAW.BST

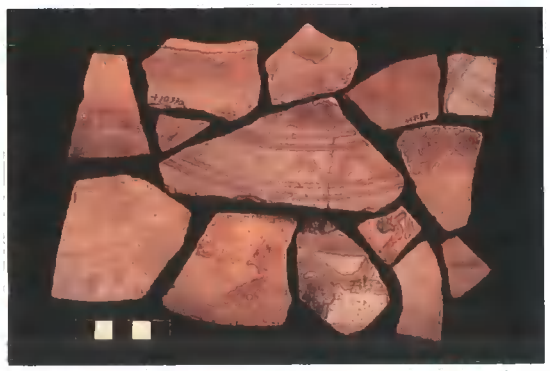

Plate 55 - PAW.SA

Plate 56 - JUL.RW

Plate 57 - JUL.RC

Plate 58 - JUL.PB

Plate 59 - JUL

Plate 60 - FOPW.1

Plate 61 - FOPW.2

Plate 62 - FOPW.3

Plate 63 - LIME

Plate 64 - TORP.1

Plate 65 - TORP.2

Plate 66 - TORP.3

Plate 67 - TORP.4

Plate 68 - TRC.1

Plate 69 - TRC.2

Plate 70 - HONEY

Plate 71 - MEW.LG

Plate 72 - MEW.LG (Handles)

Plate 73 - MEW.MO

Plate 74 - MEW.DG

Plate 75 - MEW.MF

Plate 76 - MEW.CC

Plate 77 - MEW.C

Plate 78 - MEW.O

Plate 79 - MEW.BR

Plate 80 - WINC

Plate 81 - INCIMP

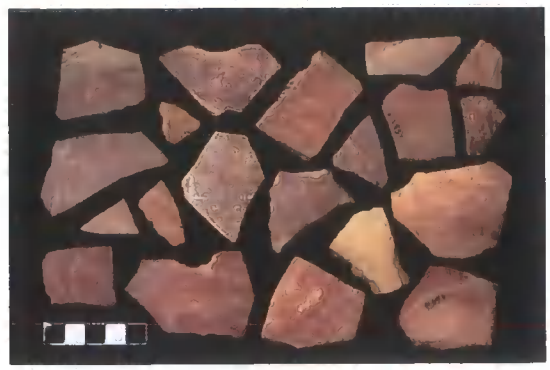

Plate 82 - SLIP.R

Plate 83 - SLIP.TB

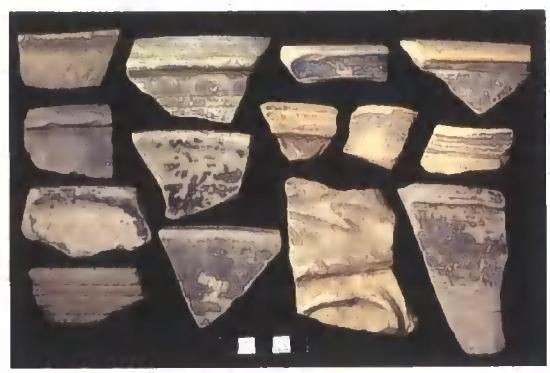

Plate 84 - SLIP.B

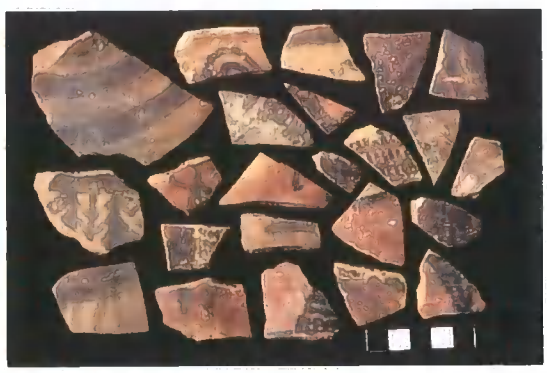

Plate 85 - SLIP.PBR

Plate 86 - IRPW

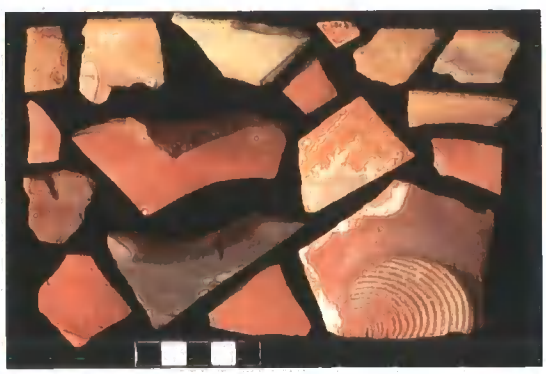

Plate 87 - FIRE

Plate 88 - IRAB

Plate 89 - BPCR

Plate 90 - ALK.1

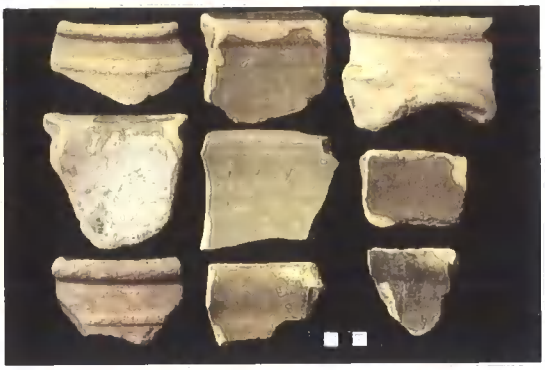

Plate 91 - ALK.2

Plate 92 - ALK.3

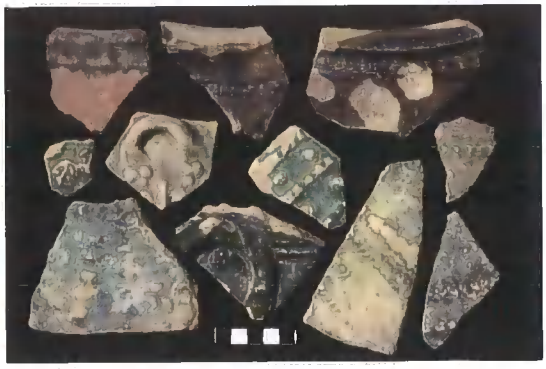

Plate 93 - ALK.RC

Plate 94 - GREG.1-2

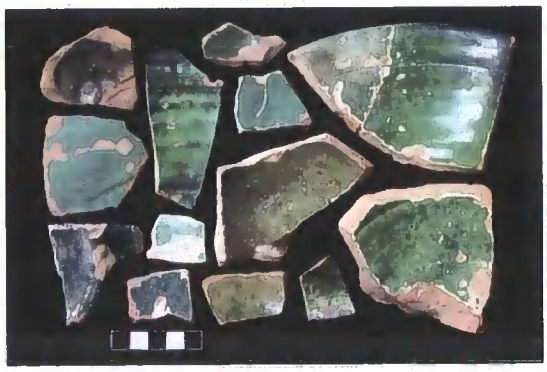

Plate 95 - MONO.G

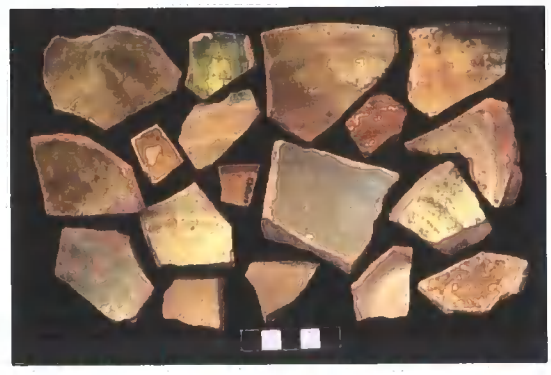

Plate 96 - MONO.Y

Plate 97 - GRAF.G

Plate 98 - GRAF.M

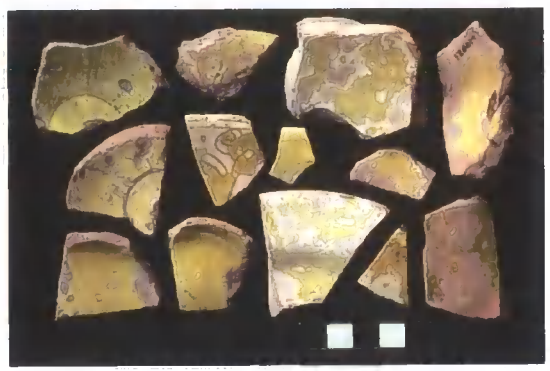

Plate 99 - GRAF.Y

Plate 100 - GRAF.B

Plate 101 - GRAF.EP

Plate 102 - GRAF.LP

Plate 103 - CHAMP

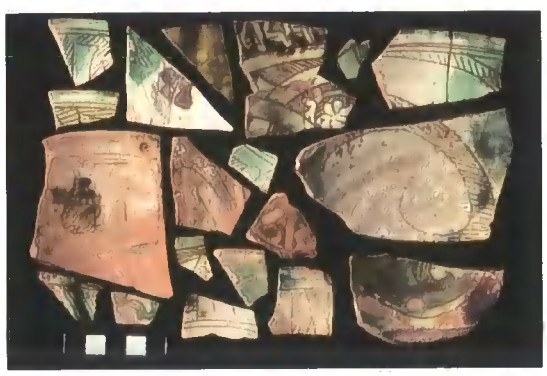

Plate 104 - GRAF.H

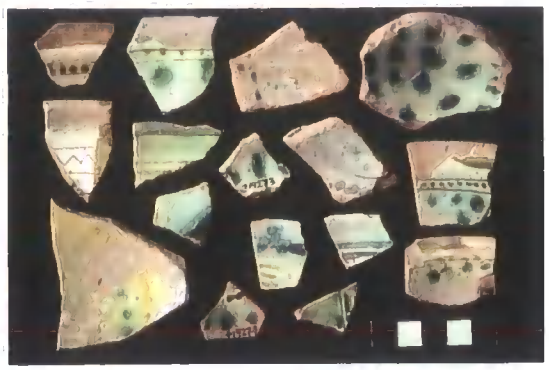

Plate 105 - GRAF.S

Plate 106 - GRAF.DI

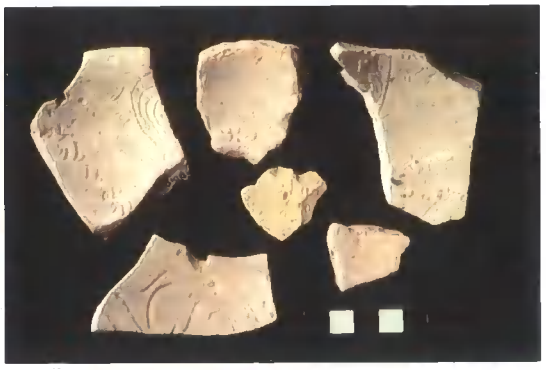

Plate 107 - GRAF.TL

Plate 108 - SPL.GW (Fabric 84)

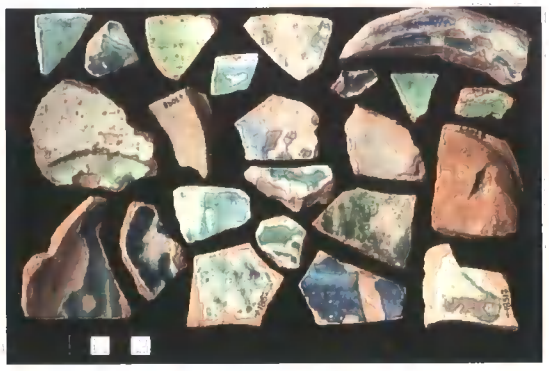

Plate 109 - SPL.GW (Fabric 85)

Plate 110 - SPL.P

Plate 111 - SPL.L

Plate 112 - SPW.YB

Plate 113 - SPW.BG

Plate 114 - SPW.BW

Plate 115 - TIN.W1

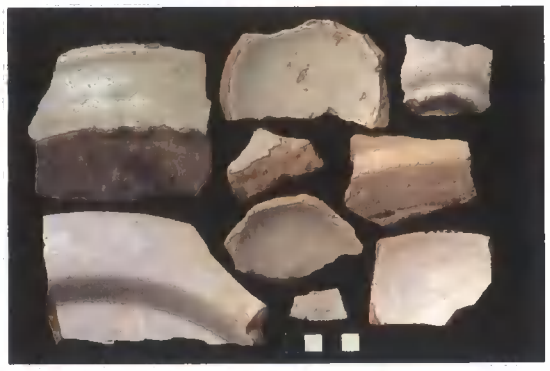

Plate 116 - TIN.W2

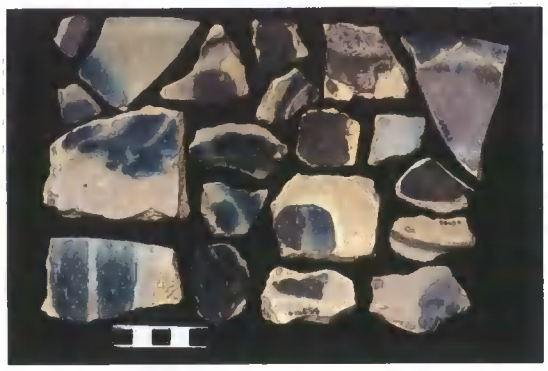

Plate 117 - TIN.TBS

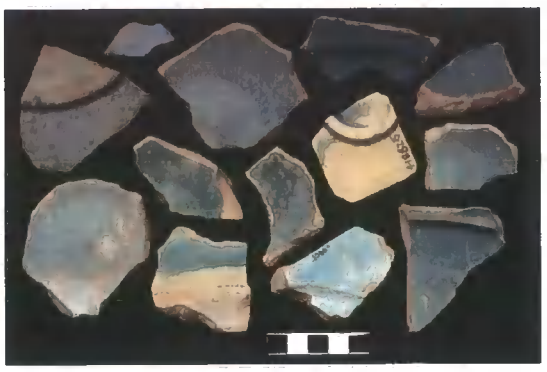

Plate 118 - TIN.T

Plate 119 - TIN.CT

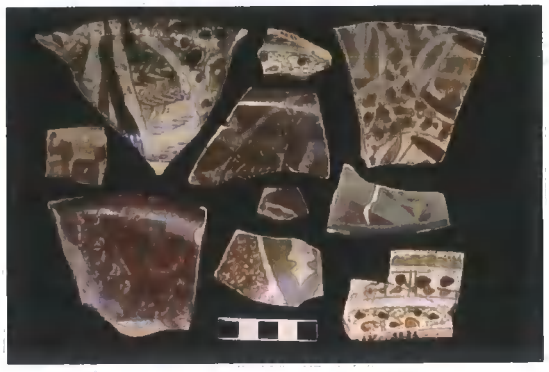

Plate 120 - TIN.PL

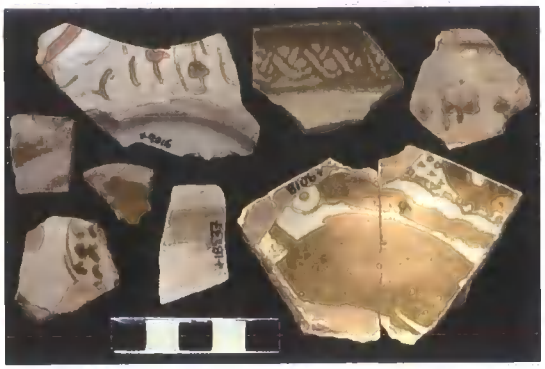

Plate 121 - TIN.ML

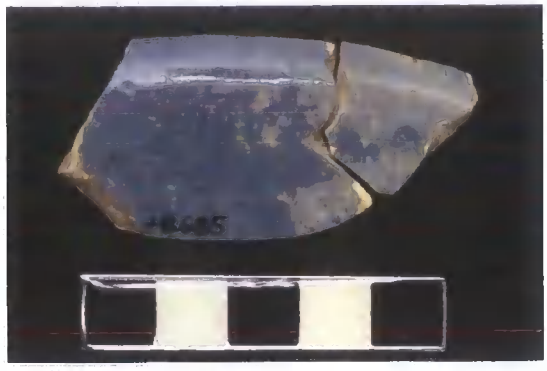

Plate 122 - TIN.B

Plate 123 - YSPEC

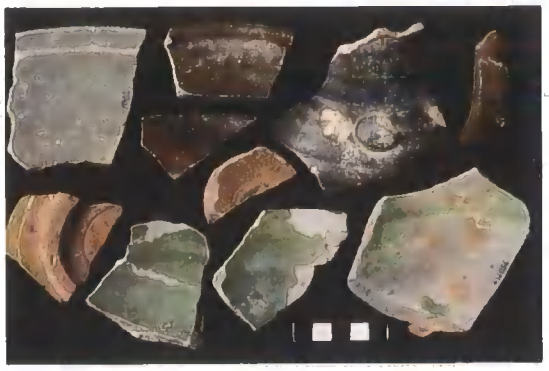

Plate 124 - KHUNJ

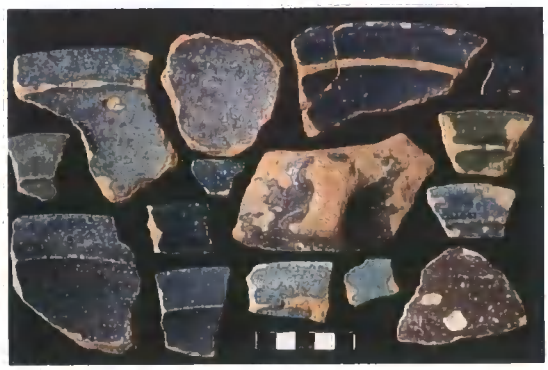

Plate 125 - PERSIA.1

Plate 126 - PERSIA.2

Plate 127 - YEMEN

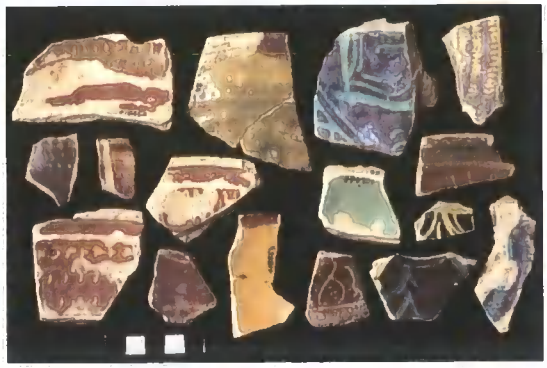

Plate 128 - REDYEL

Plate 129 - MGP.1

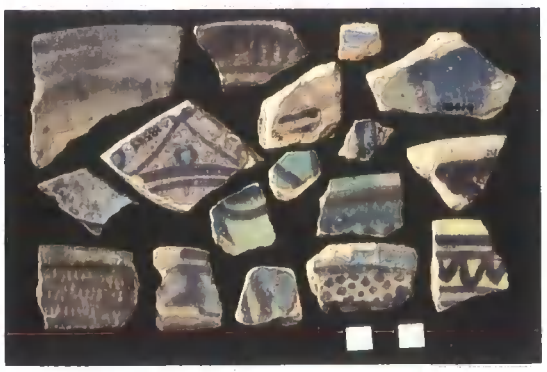

Plate 130 - MGP.2

Plate 131 - MGP.3

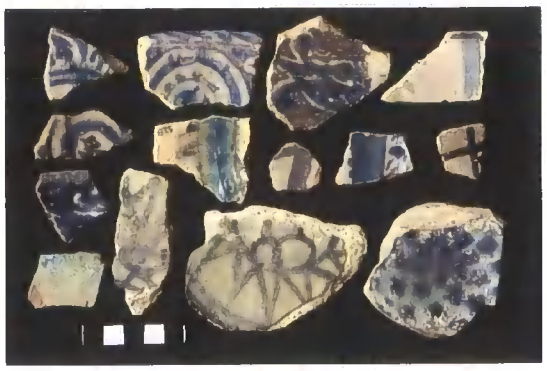

Plate 132 - UGP.G1

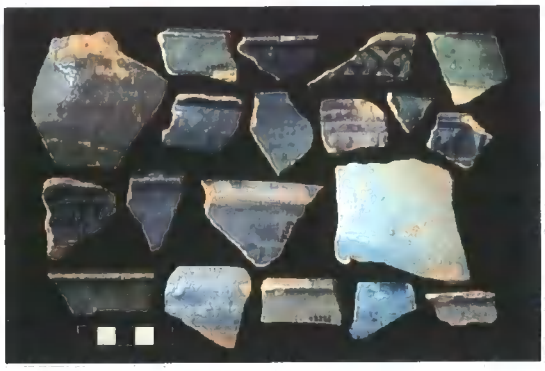

Plate 133 - UGP.G2

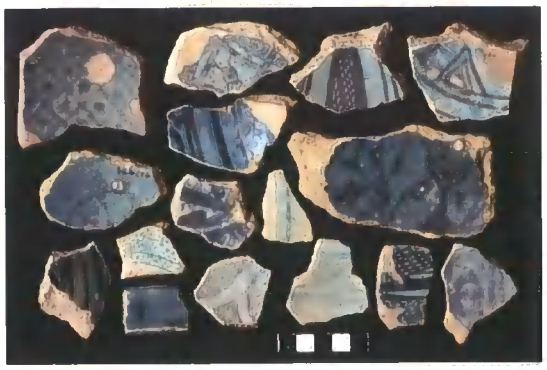

Plate 134 - UGP.C1

Plate 135 - UGP.C2

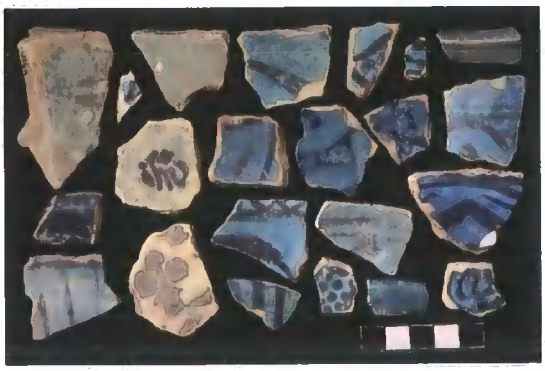

Plate 136 - UGP.F1

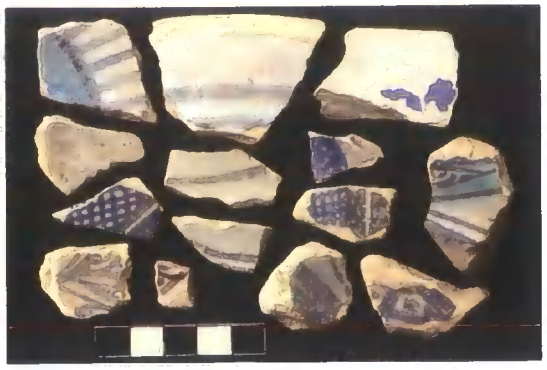

Plate 137 - UGP.F2

Plate 138 - UGP.BW

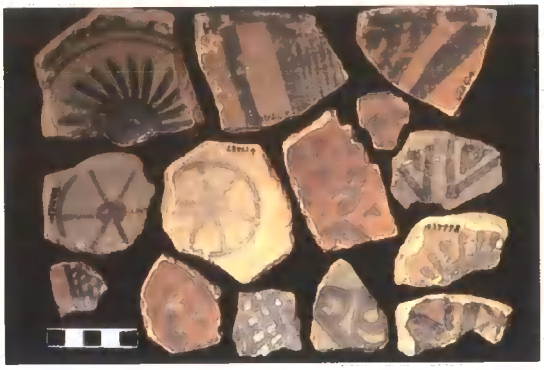

Plate 139 - UGP.TTB

Plate 140 - CHIN

Plate 141 - STO.EU

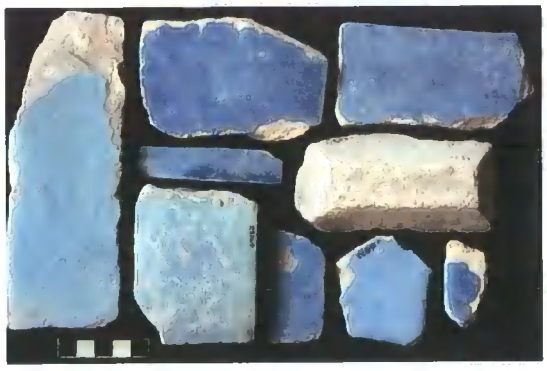

Plate 142 - GT.1

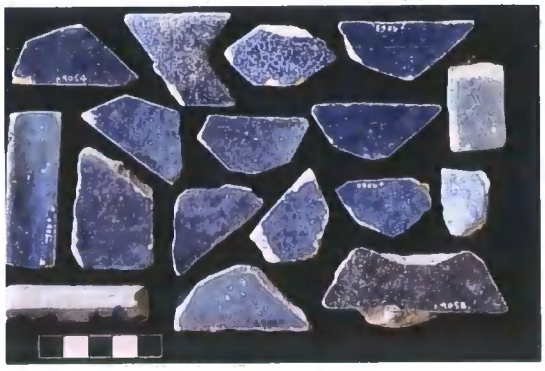

Plate 143 - GT.2

Plate 144 - GT.3

Plate 145 - GT.4

Plate 146 - GT.5

Plate 147 - KD.1

Plate 148 - KD.2

Plate 149 - KD.3

Plate 150 - KD.4

Plate 151 - FRIT.BW

Plate 152 - FRIT.B

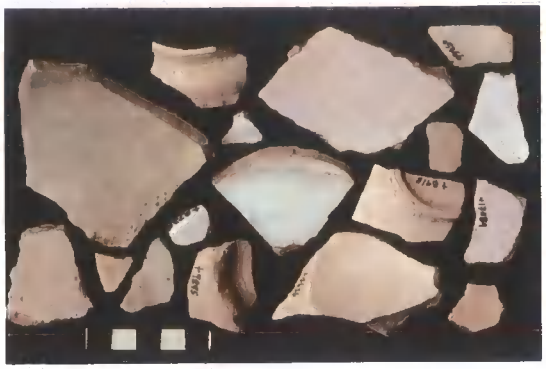

Plate 153 - FRIT.W

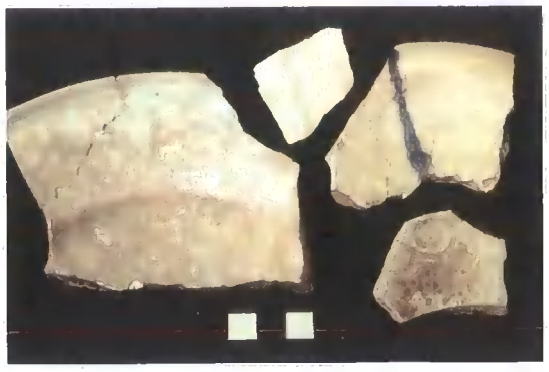

Plate 154 - FRIT.IW

Plate 155 - FRIT.MW

Plate 156 - FRIT.G

Plate 157 - FRIT.P

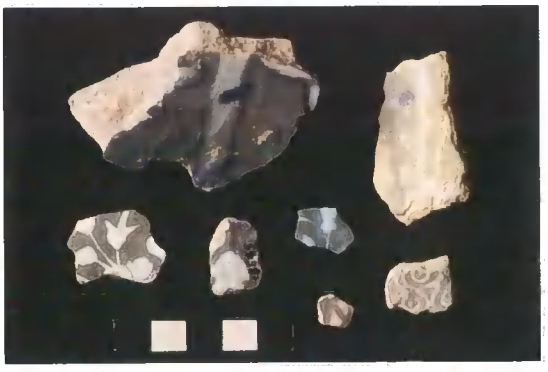

Plate 158 - FRIT.GW

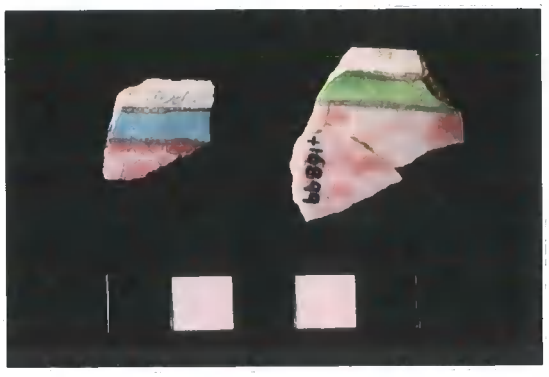

Plate 159 - FRIT.EI (Obverse)

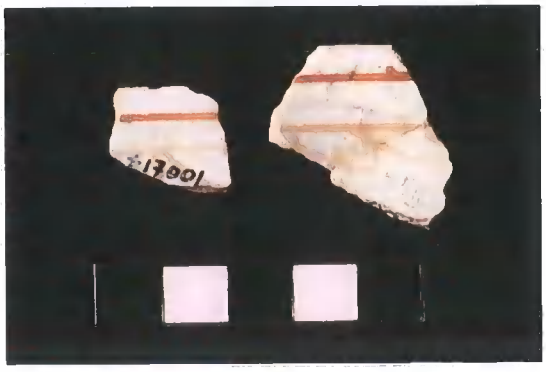

Plate 160 - FRIT.EI (Reverse)

Plate 161 - FRIT.TBU

Plate 162 - FRIT.T

Plate 163 - FRIT.IT

Plate 164 - FRIT.MT

Plate 165 - FRIT.TB

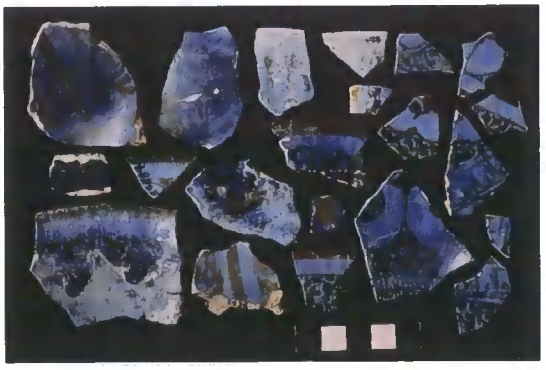

Plate 166 - FRIT.BL

Plate 167 - FRIT.L

Plate 168 - CHANG

Plate 169 - DUSUN

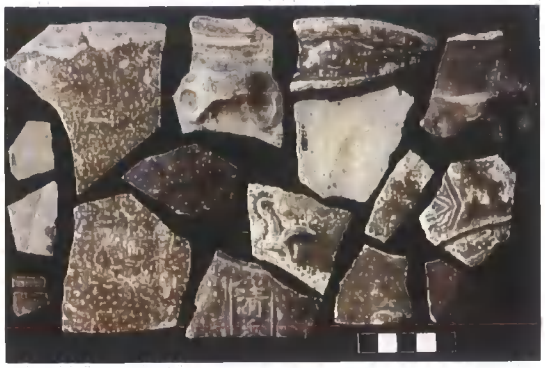

Plate 170 - MTB.1

Plate 171 - MTB.2

Plate 172 - LIB

Plate 173 - DAB

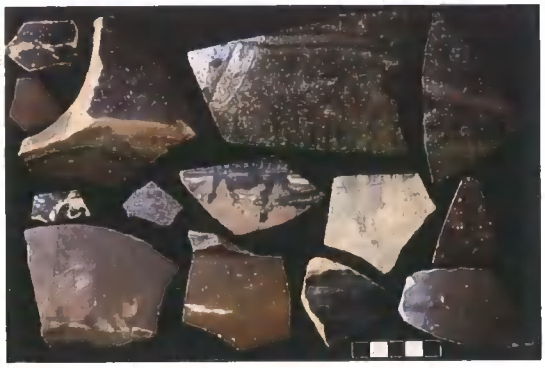

Plate 174 - IGSJ

Plate 175 - CIZHOU (Obverse)

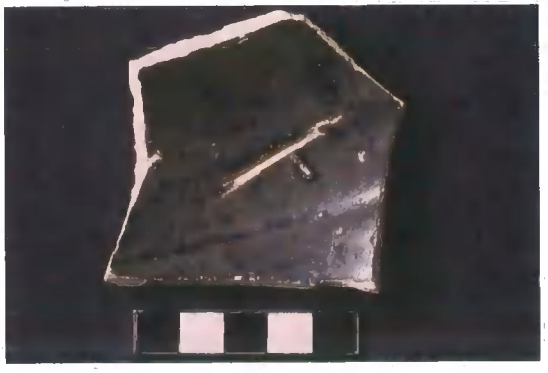

Plate 176 - CIZHOU (Reverse)

Plate 177 - STO.THAI

Plate 178 - STO.BUR

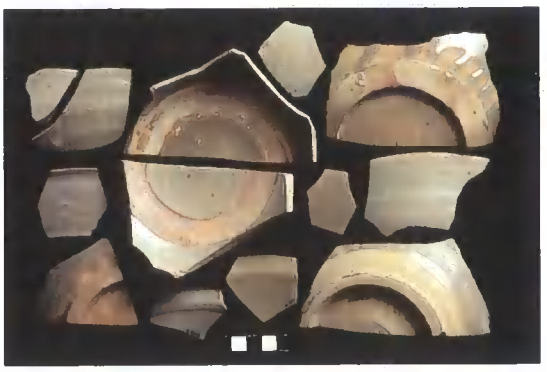

Plate 179 - STO.GRY

Plate 180 - CREAM

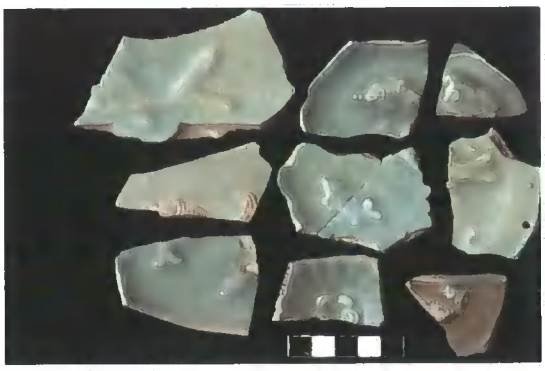

Plate 181 - LQC.1 (Form LQC.1: 01)

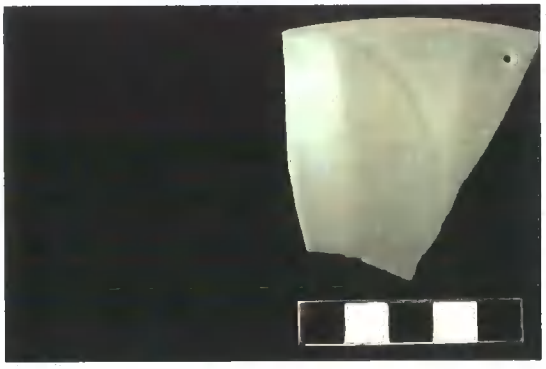

Plate 182 - LQC.1 (Form LQC.1: 04)

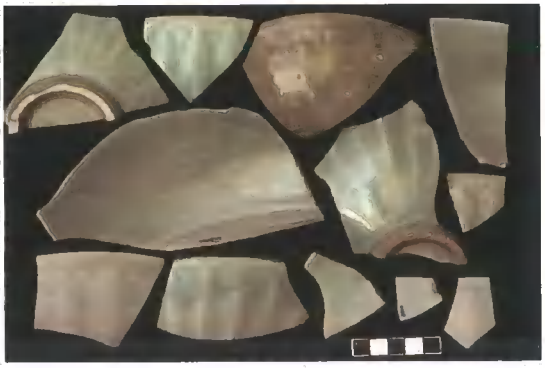

Plate 183 - LQC.2 (Form LQC.2: 01)

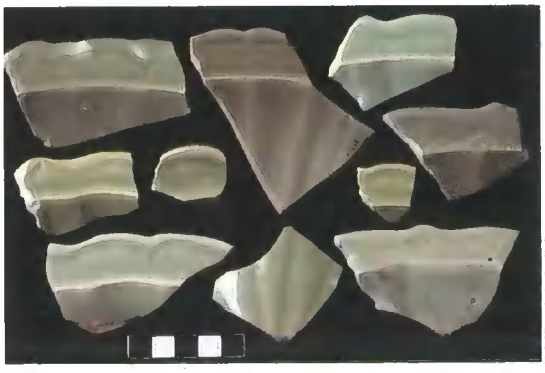

Plate 184 - LQC.2 (Form LQC.2: 02)

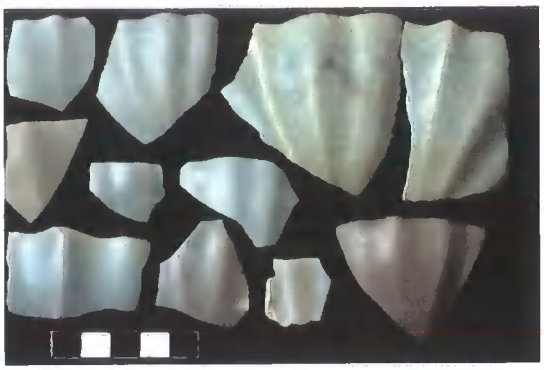

Plate 185 - LQC.2 (Form LQC.2: 04)

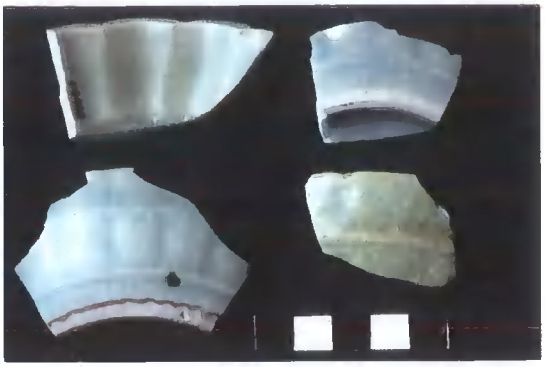

Plate 186 - LQC.2 (Form LQC.2: 07)

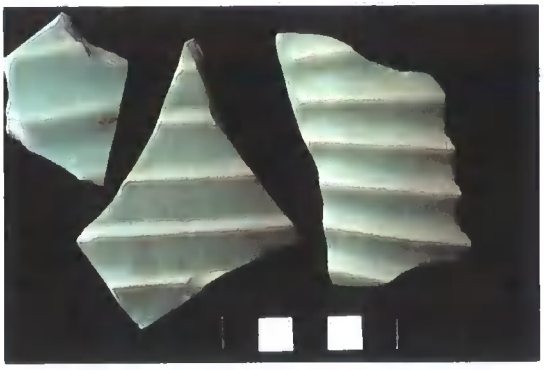

Plate 187 - LQC.2 (Form LQC.2: 08)

Plate 188 - LQC.2 (Form LQC.2: 15)

Plate 189 - LQC.2 (Form LQC.2: 16)

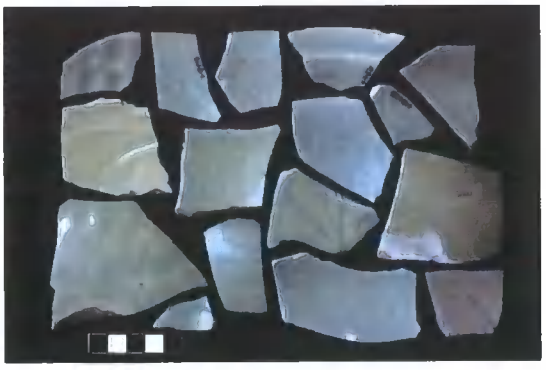

Plate 190 - LQC.2 (Form LQC.2: 19)

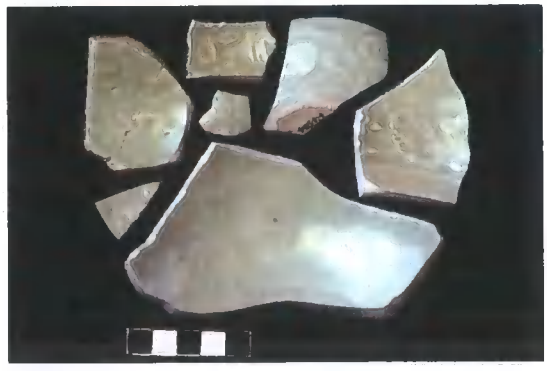

Plate 191 - LQC.2 (Form LQC.2: 20)

Plate 192 - LQC.3 (Form LQC.3: 02)

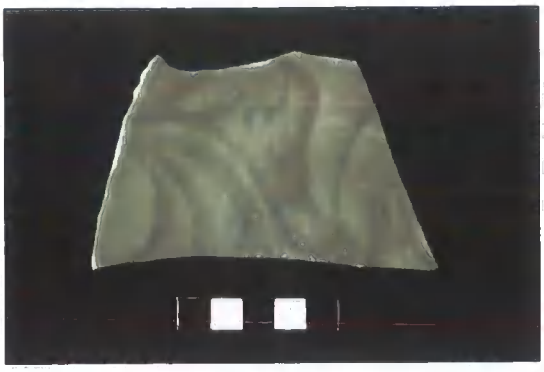

Plate 193 - LQC.3 (Form LQC.3: 04)

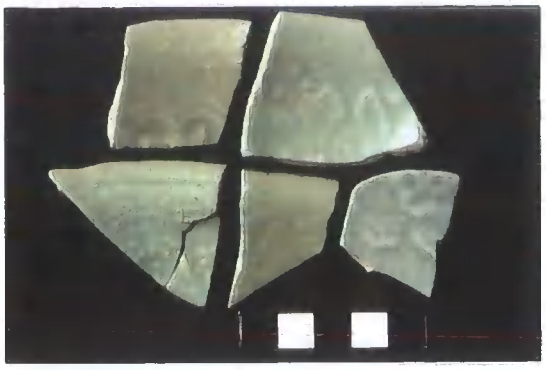

Plate 194 - LQC.3 (Form LQC.3: 05)

Plate 195 - LQC.3 (Form LQC.3: 06)

Plate 196 - LQC.3 (Form LQC.3: 07)

Plate 197 - LQC.3 (Form LQC.3: 08)

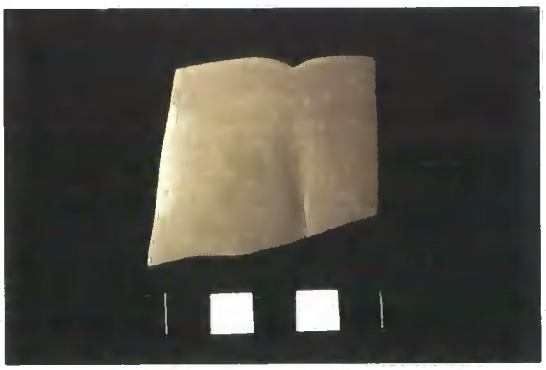

Plate 198 - GDC.1

Plate 199 - GDC.2

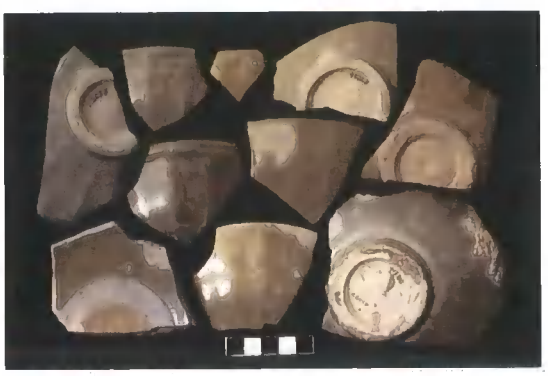

Plate 200 - GDC.3

Plate 201 - GDC.4

Plate 202 - JDC

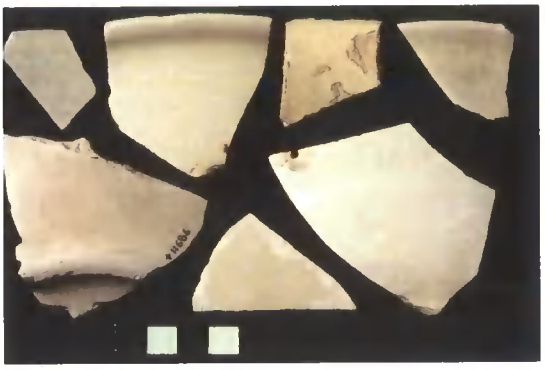

Plate 203 - WWSL

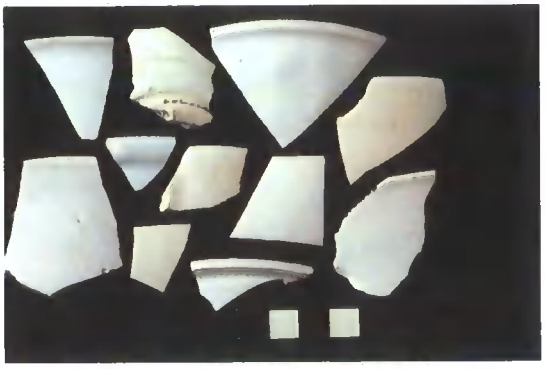

Plate 204 - WWS.1

Plate 205 - WWS.2

Plate 206 - WWS.3

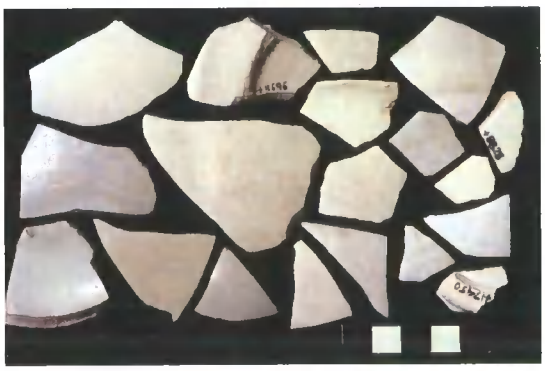

Plate 207 - WWS.4

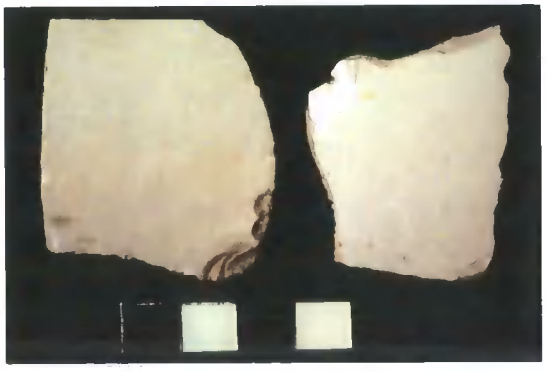

Plate 208 - WWS.5

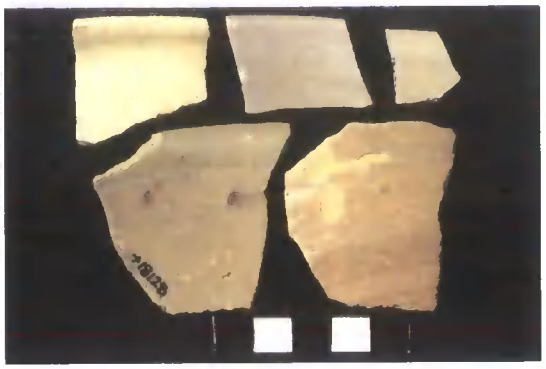

Plate 209 - WWS.6

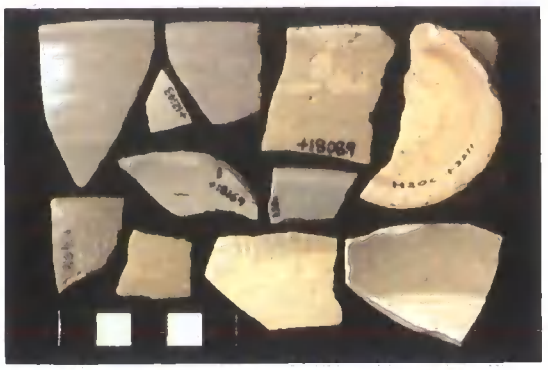

Plate 210 - WWS.7

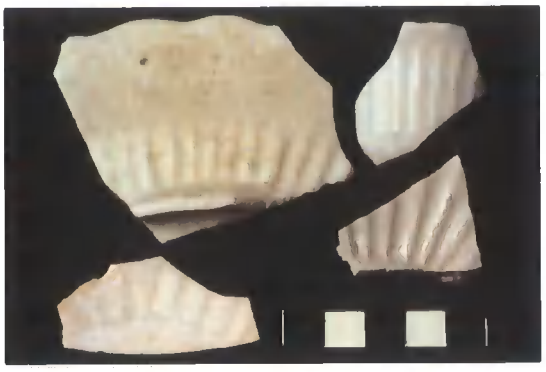

Plate 211 - WWS.8

Plate 212 - WWS.10

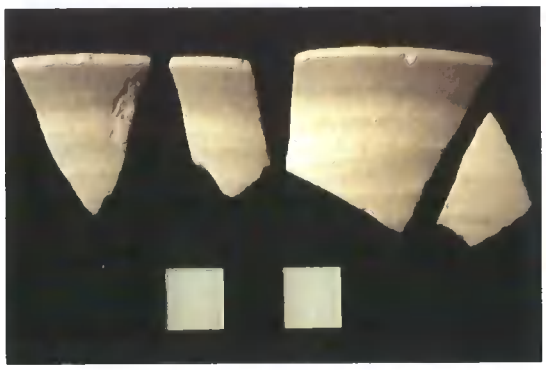

Plate 213 - WWF

Plate 214 - WWG.1

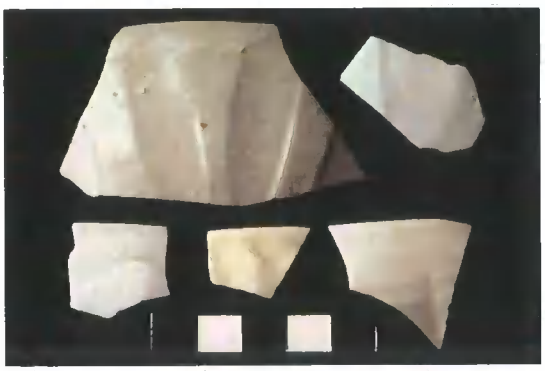

Plate 215 - WWG.2

Plate 216 - WWG.3

Plate 217 - OING.1

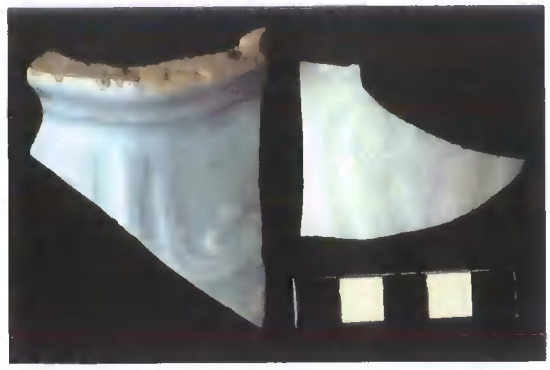

Plate 218 - OING.2

Plate 219 - DEH.1

Plate 220 - DEH.2

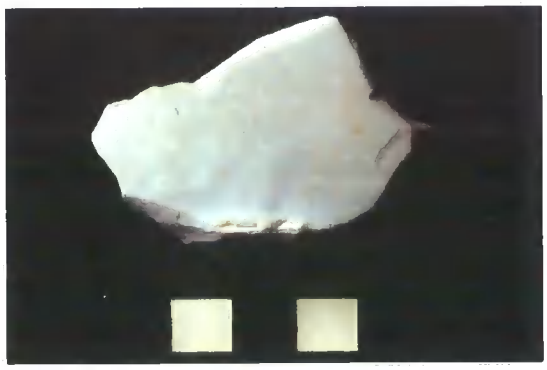

Plate 221 - WWJ.1

Plate 222 - WWJ.2

Plate 223 - WWJ.3

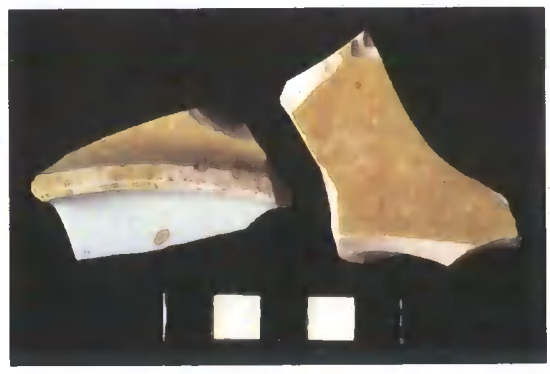

Plate 224 - WWJ.4

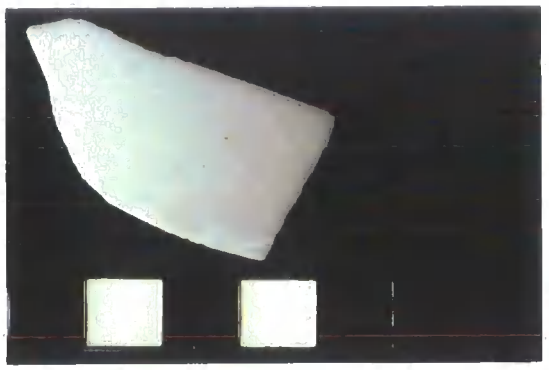

Plate 225 - WW.1

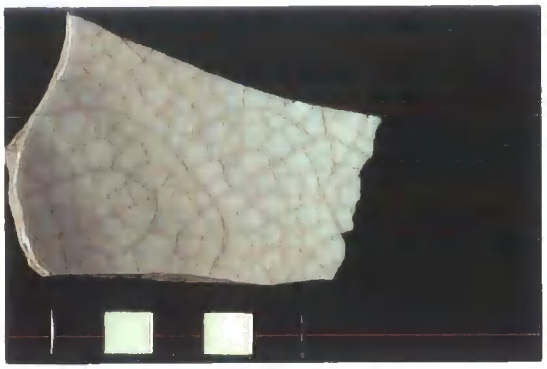

Plate 226 - WW.2

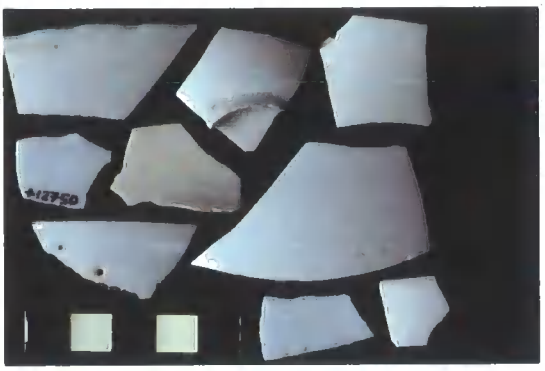

Plate 227 - WW.3

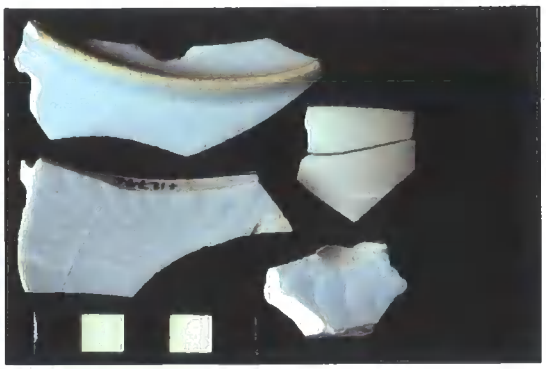

Plate 228 - WW.4

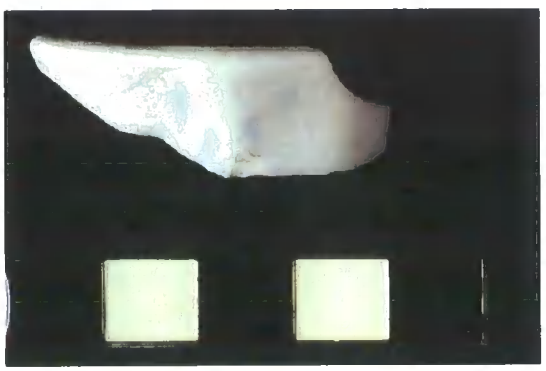

Plate 229 - WW.5

Plate 230 - CBW.1

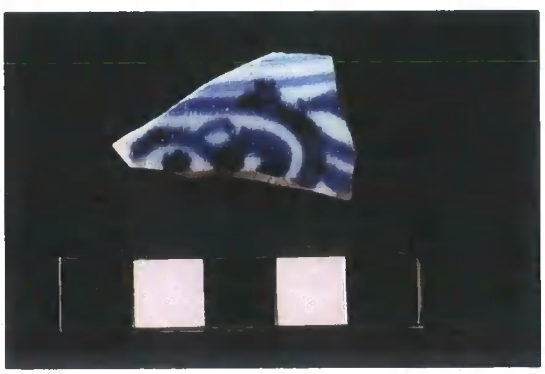

Plate 231 - CBW.2

Plate 232 - CBW.3

Plate 233 - CBW.4

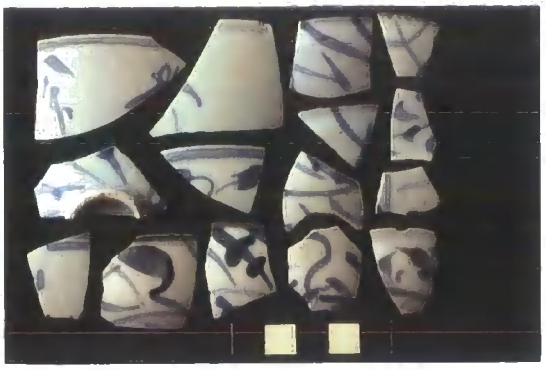

Plate 234 - CBW.4 (Sub-Group)

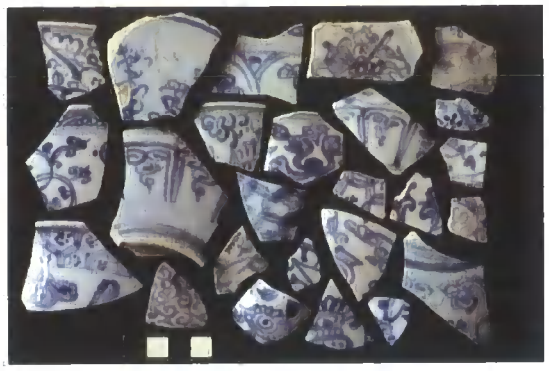

Plate 235 - CBW.5

Plate 236 - CBW.6

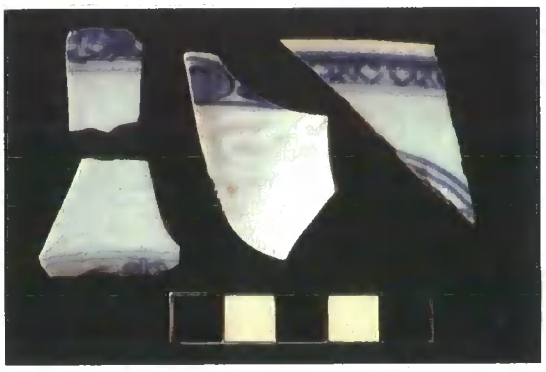

Plate 237 - CBW.7

Plate 238 - CBW.8

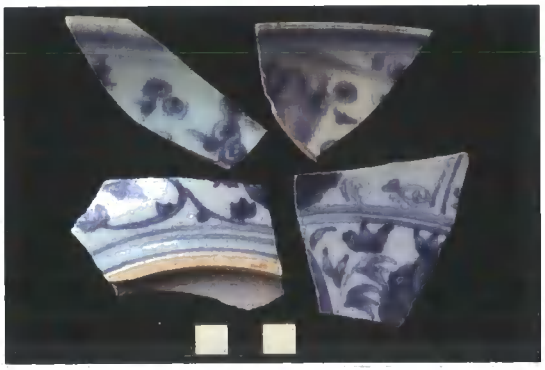

Plate 239 - CBW.9

Plate 240 - CBW.10

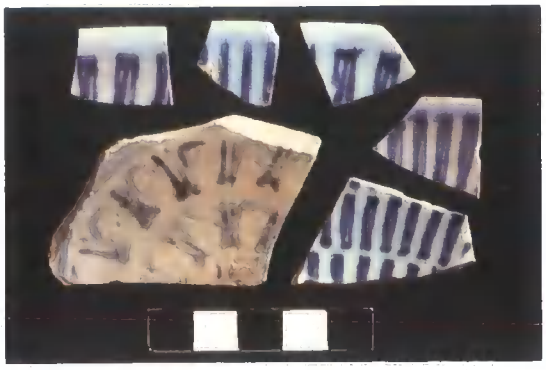

Plate 241 - CBW.11

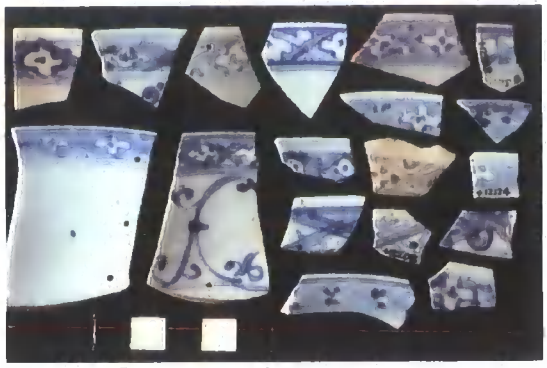

Plate 242 - CBW.12

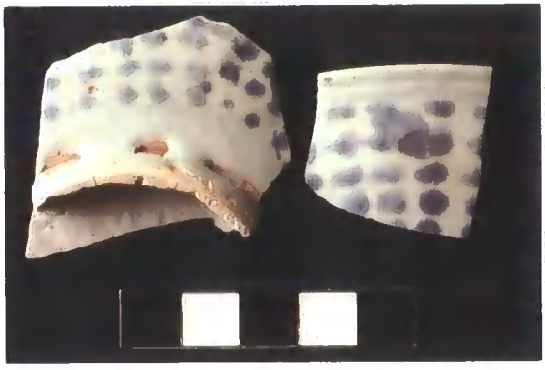

Plate 243 - CBW.13

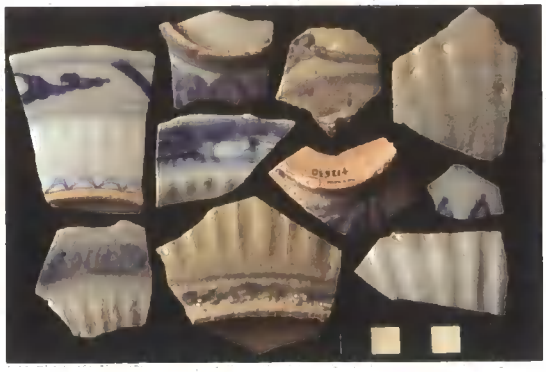

Plate 244 - CBW.14

Plate 245 - CBW.15

Plate 246 - CBW.16

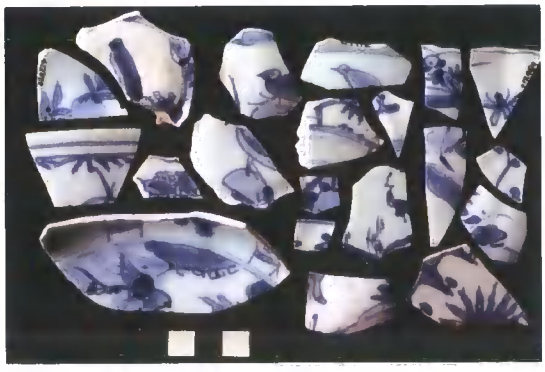

Plate 247 - CBW.17

Plate 248 - CBW.18

Plate 249 - CBW.19

Plate 250 - CBW.20

Plate 251 - CBW.21

Plate 252 - CBW.22

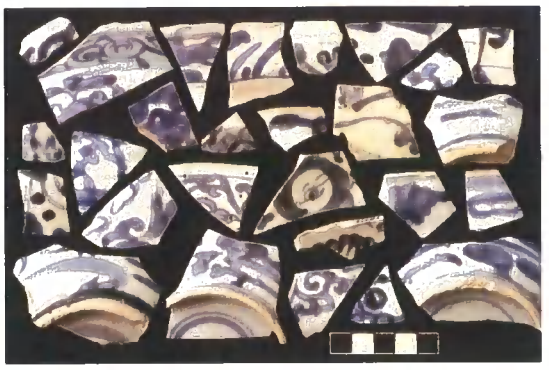

Plate 253 - CBW.23

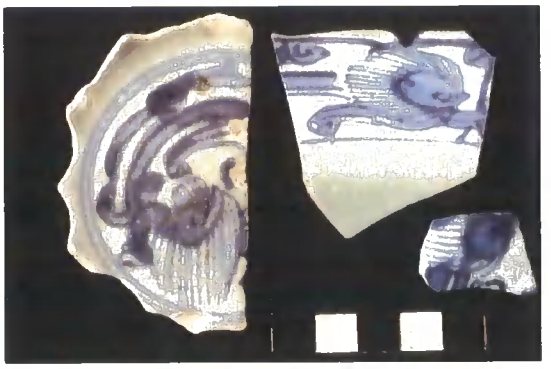

Plate 254 - CBW.24

Plate 255 - CBW.25

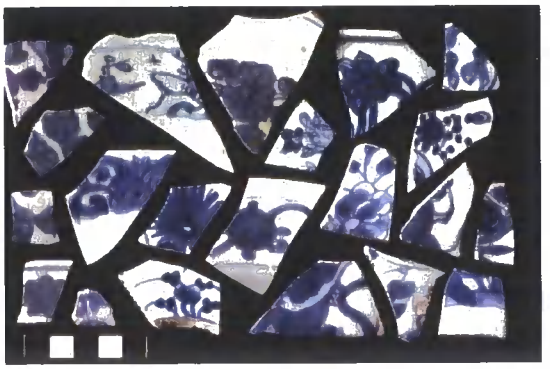

Plate 256 - CBW.26

Plate 257 - CBW.27

Plate 258 - CBW.28

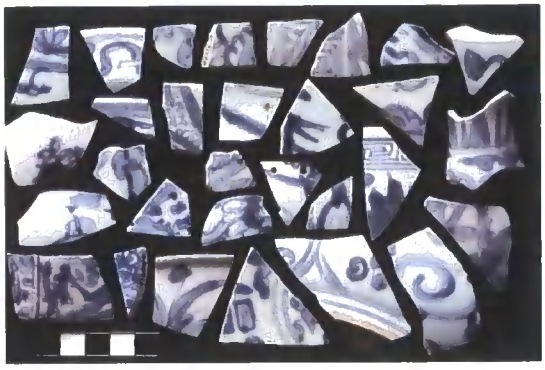

Plate 259 - CBW.29

Plate 260 - CBW.30

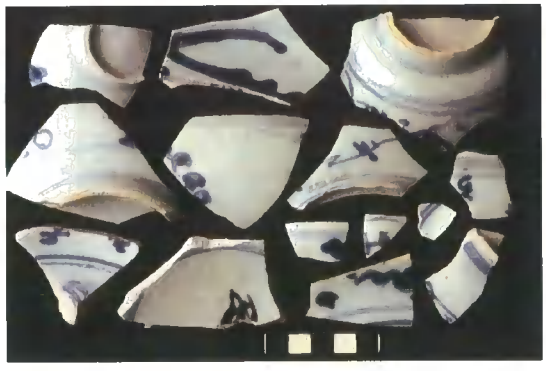

Plate 261 - CBW.31

Plate 262 - CBW.32

Plate 263 - CBW.33

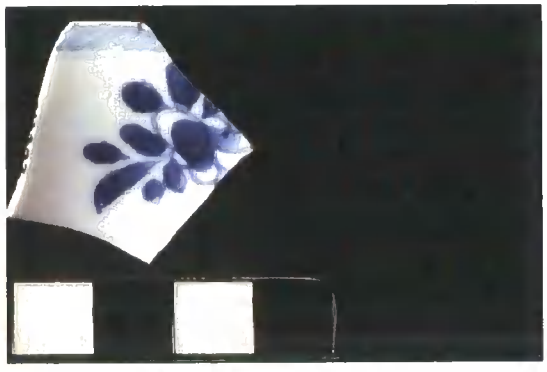

Plate 264 - CBW.34 (Obverse)

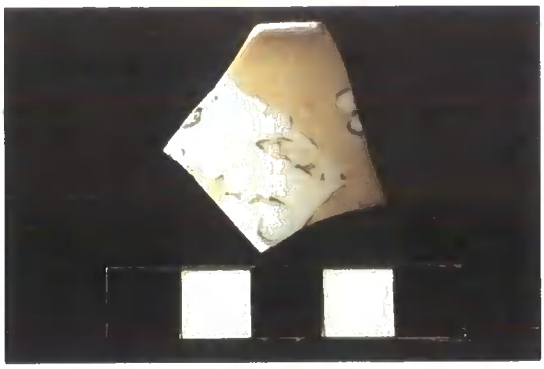

Plate 265 - CBW.34 (Reverse)

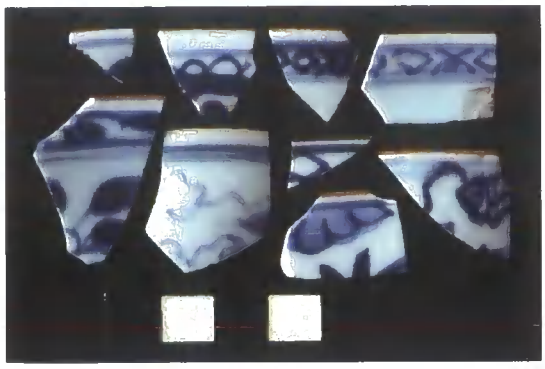

Plate 266 - CBW.35

Plate 267 - CBW.36

Plate 268 - CBW.37.1

Plate 269 - CBW.37.2

Plate 270 - CBW.38

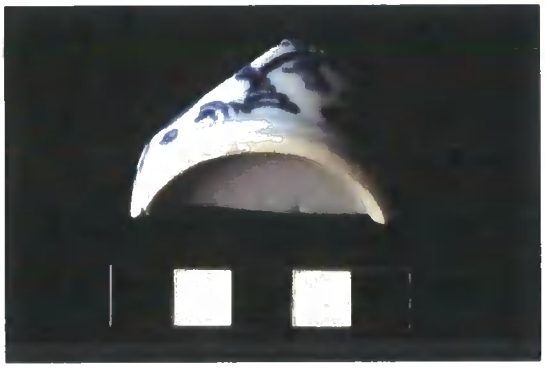

Plate 271 - CBW.39

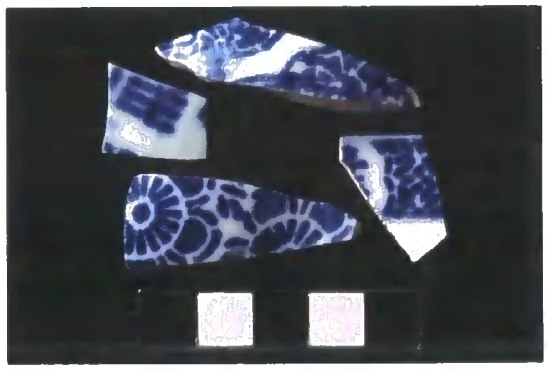

Plate 272 - CBW.40

Plate 273 - CBW.41

Plate 274 - CBW.42

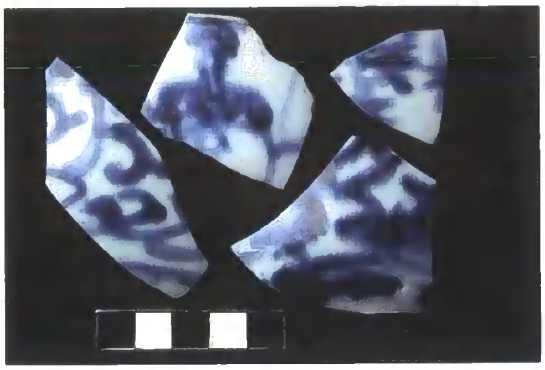

Plate 275 - CBW.43

Plate 276 - CBW.44

Plate 277 - CBW.45

Plate 278 - ENAM

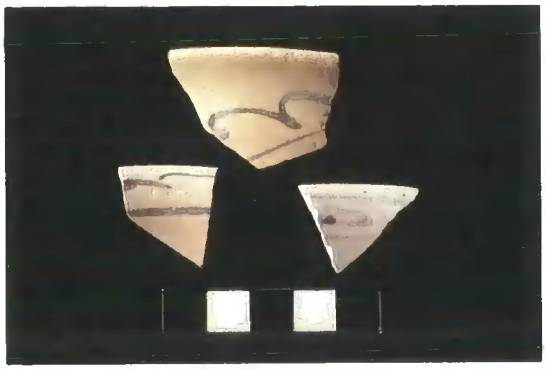

Plate 279 - VBW.1

Plate 280 - VBW.2